

# Agilent BioTek Cytation C10 Confocal Imaging Reader

The bench-size microplate imaging and analysis workhorse



# Agilent BioTek Cytation C10 Confocal Imaging Reader



The Agilent BioTek Cytation C10 brings cost-effective automated spinning disk confocal microscopy to any lab that needs it along with established multimode reading design in a single, easy-to-use instrument.

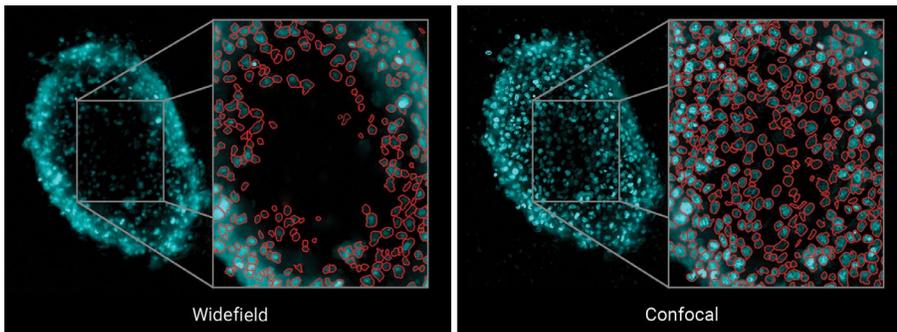


The Agilent BioTek Cytation C10 shown with CO<sub>2</sub>/O<sub>2</sub> gas controller and dual reagent injectors.

## Compact, affordable confocal imager for every laboratory



Expertise gained over several years of Cytation development, along with customer feedback, resulted in the Cytation C10.... an automated confocal microscope with excellent performance at a truly attainable price.



### Confocal: Improved image quality and analysis

Confocal microscopy can enable you to see a level of detail in your samples that is not possible with widefield optics. Not only can you obtain improved image quality, you can get improved quantification and analysis with confocal images and Agilent BioTek Gen5 software.



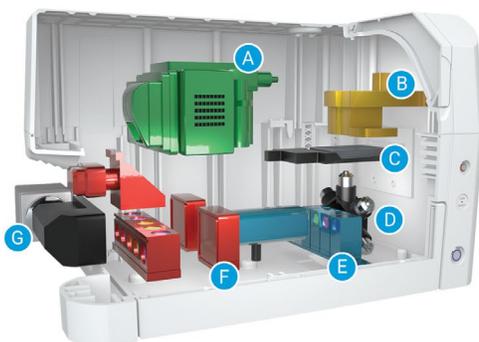
Olympus

Hamamatsu

Semrock

### High quality optical components

High quality objectives, filters and other components including Olympus objectives, Hamamatsu sCMOS Orca camera and Semrock filters and other well-known brands, are used in Cytation C10, enabling the capture of stunning, publication-quality images.



- A.** Monochromator-based multimode reader module
- B.** Transmitted light optics
- C.** Plate carrier
- D.** Automated six-position objective turret
- E.** LED-based widefield module
- F.** Laser-based spinning disk confocal module
- G.** sCMOS camera

### Confocal imaging and multimode plate reader in one

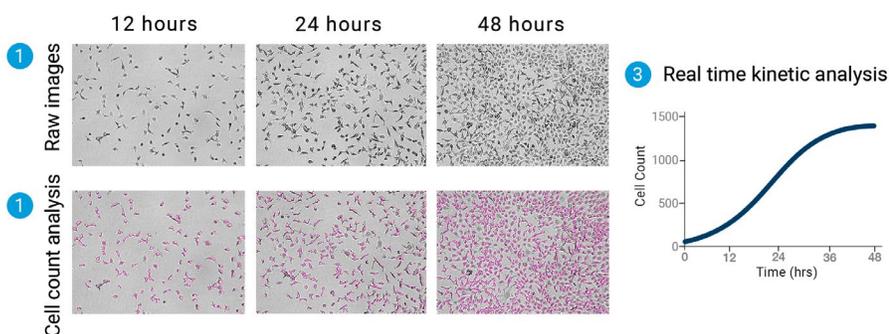
With a combination of spinning disk confocal and widefield imaging, plus multimode reader, Cytation C10 is truly ready for any assay. And since Cytation C10 is a modular, upgradable instrument, you can get the functionality you need today and add modules later as your needs expand.



## Automated multiplate confocal and widefield live cell analysis

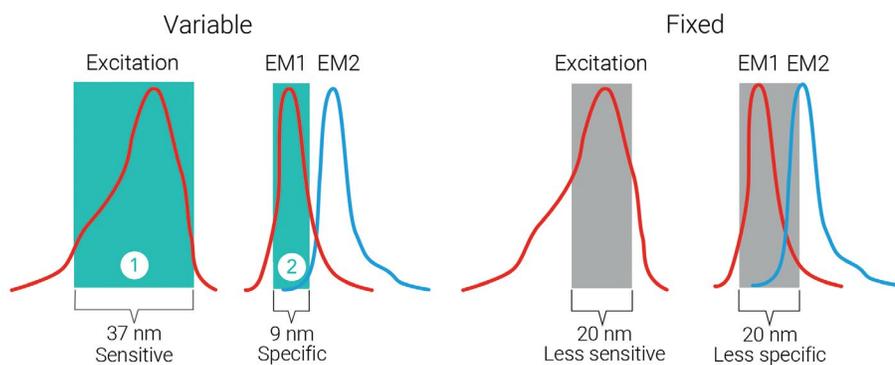
When paired with the Cytation C10 confocal imaging reader, the Agilent BioTek BioSpa 8 automated incubator automates a variety of applications in multiple plates for real-time live cell imaging and analysis.

This system provides incubation and humidity control for up to eight microplates when conducting long-term kinetic assays.



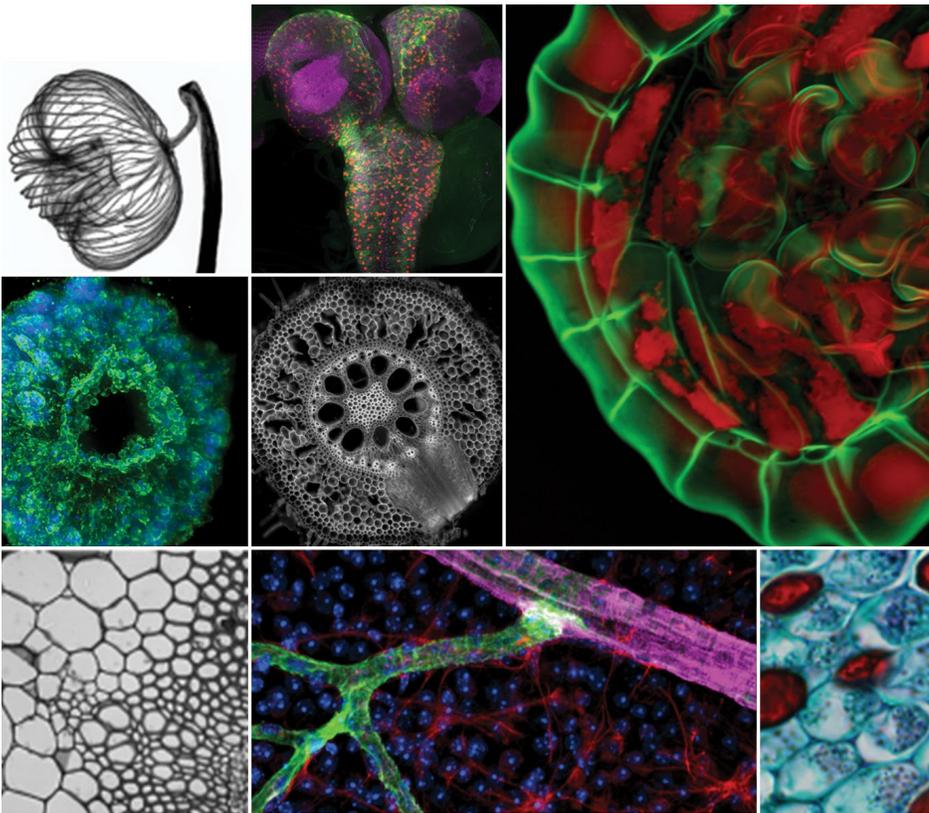
## Environmental controls for live cell imaging

Successful live cell kinetic imaging relies on a consistent environment, including temperature control and CO<sub>2</sub>/O<sub>2</sub> control and monitoring. Cytation C10 provides the perfect environment to grow and analyze live cells over time. Powerful movie maker and kinetic analysis software tools allow visualizing and analysis of time-lapse experiments.



## Variable bandwidth for sensitivity and specificity

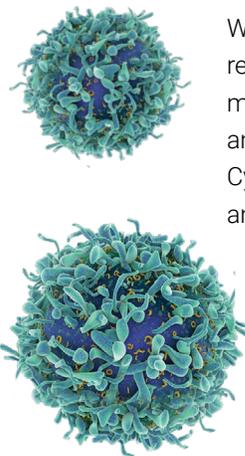
The plate reader optics of Cytation C10 use a quad monochromator design with variable bandwidth. The bandwidth can be set anywhere between 9 and 50 nm in 1 nm increments. Large bandwidth settings provide increased sensitivity and lower limits of detection. Small bandwidth settings provide increased specificity when multiple signals are present, which reduces signal crosstalk and enhances assay performance.



## Confocal plus widefield = stunning images and analysis

Cytation C10 captures stunning detail in a wide variety of sample types. Use widefield imaging for faster acquisition of large samples at lower magnification, switch to confocal to image small intracellular details or 3D samples. Or combine both modes for highly multiplexed, multiparameter imaging experiments.

- 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 reader and advanced microscopy mode, Cytation C10 is truly ready for any assay. Contact us to learn how Cytation C10 can transform your lab and greatly increase your productivity.

1	1	2	3
A	1989	13885	1157
B	1960	3703	16597
C	13209	3132	1629

(1) Plate reader quickly identifies GFP positive wells.

2	1	2	3
A			
B			
C			

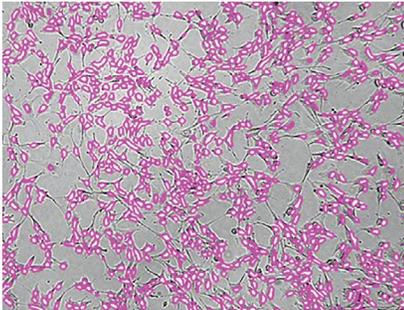
(2) Only GFP positive wells are imaged, saving both time and computer memory.

## Hit-picking: multimode detection and imaging saves time and data storage

Acquiring imaging data sets can take a long time and can require high data storage capacity. The hit-picking function saves time and storage. Set the hit picking criteria, quickly prescreen the microplate with the plate reader optics and Cytation C10 will automatically image only the samples that meet your criteria.

# Applications

## Label-free cell counting



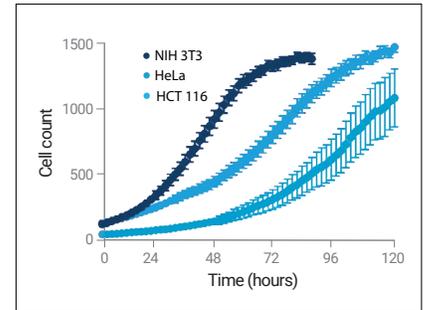
Use high contrast brightfield imaging for accurate label-free cell counting without the need for cell labeling dyes.

## Calcium kinetics



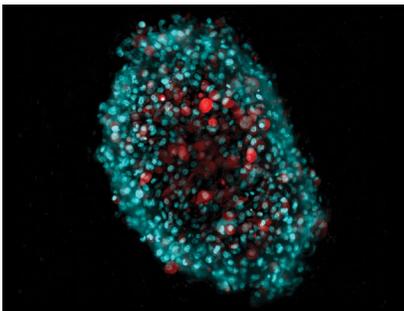
The Cytation C10 dual reagent injectors enable capture and analysis of fast inject/image assays like calcium kinetics.

## Time-lapse live cell imaging



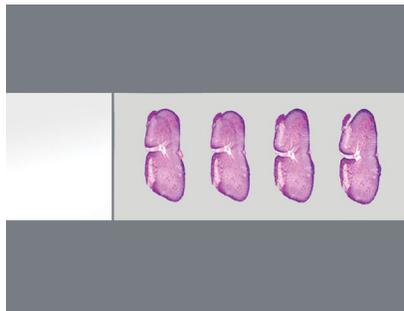
Cell proliferation studies require controlled environments. Cytation C10 automates image capture through analysis.

## 3D cell culture



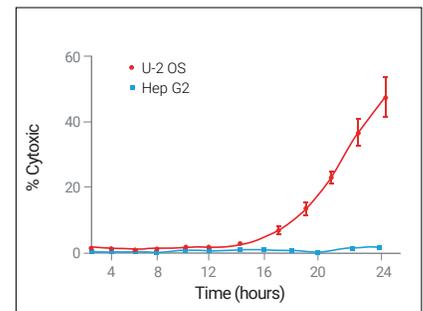
Automate 3D spheroid and tumoroid assays using environment control and automated media exchange with a BioTek liquid handler. Z-stack, z-project and analyze with Gen5.

## Slide scanning



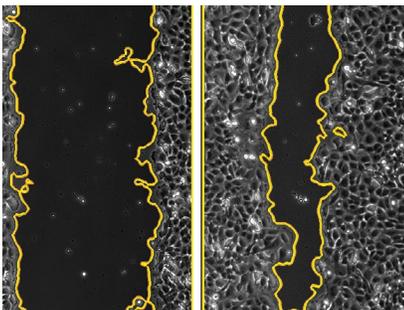
H&E staining and color brightfield allow easy, rapid image capture and analysis. Automate and increase throughput by integrating Cytation C10 to the Agilent BioTek BioStack microplate stacker.

## Cell viability/toxicity



Classic live/dead assays use fluorescent probes or membrane-impermeable dyes; viability or toxicity is measured in real time.

## Cell migration



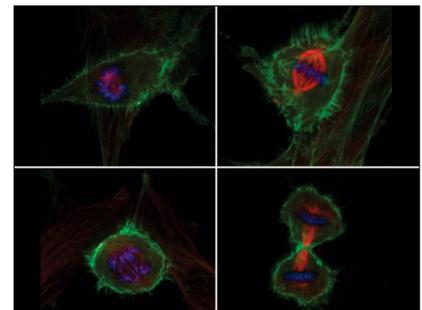
The time-lapse imaging and environmental controls in Cytation C10 enable kinetic cell migration assay imaging.

## Whole organism imaging



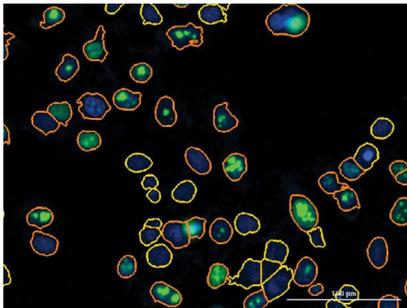
Essential to current drug screening methods, whole organisms like zebrafish and nematodes are effectively imaged and analyzed with Cytation C10 and Gen5 software.

## Cell cycle analysis



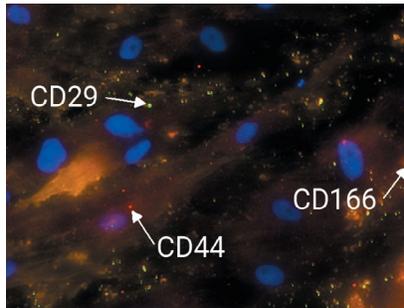
The progression of cellular growth through the cell cycle is a highly regulated process. Automated histogram analysis of objects facilitates threshold definition.

### Transfection efficiency



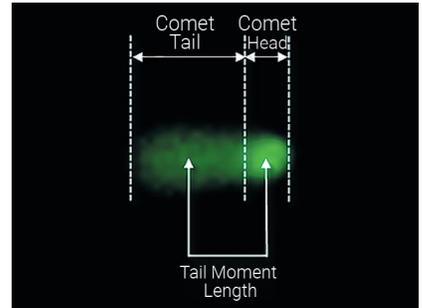
Cytation C10 provides intuitive image analysis for automating the assessment of transfection efficiency.

### Stem cell differentiation



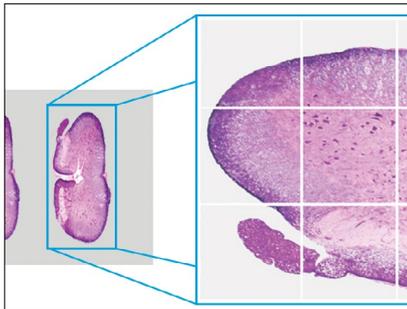
Cytation C10 facilitates the process of stem cell differentiation to find highly physiologically relevant cells for drug discovery.

### Genotoxicity



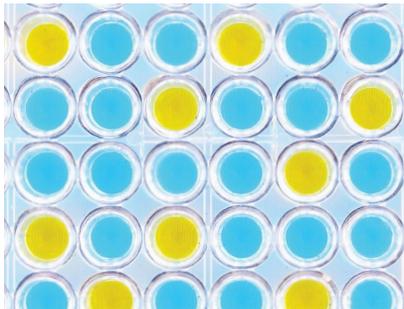
The destructive effects of mutagens such as high energy radiation and chemicals on nuclear DNA are measured with the comet assay and γH2AX immunofluorescence assays. Cytation C10 is an ideal imaging platform for these assays.

### Automatic ROI identification



An accelerated process for imaging ROIs in complex microscopic samples. Use the AutoROI module option in Gen5 to automatically find ROIs, then image at a higher magnification.

### ELISA



ELISA methods with colorimetric, fluorescent and luminescent substrates are easily detected with Cytation C10.

### Luciferase reporter assays



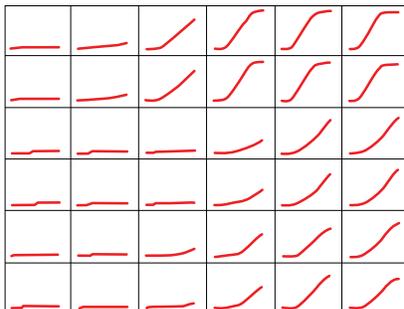
Luciferase-based reporter assays measure luminescent signal, allowing the quantification of the activity of factors affecting the signaling pathways under investigation.

### Nucleic acid and protein quantification



Nucleic acid and protein quantification assays can be executed by spectrophotometric or fluorescent determination with Cytation C10, in microplates or in microvolumes with the Agilent BioTek Take3 plate.

### Cell growth



Microbial growth assays including yeast and bacteria can be measured by several methods, including turbidimetric measurements with Cytation C10.

# Peripherals



## BioStack microplate stacker

BioStack manages up to 50 microplates for automated imaging or multimode operations, including de-lidding and re-lidding of microplates used with cell-based assays. BioStack can also be used for automated microscope slide loading.



## CO<sub>2</sub>/O<sub>2</sub> controller

The compact gas controller maintains control of CO<sub>2</sub> and O<sub>2</sub> levels in Cytation C10 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.



### Cytation C10 confocal imaging reader

Cytation C10 combines automated digital confocal and widefield microscopy with conventional multimode microplate reading in a unique, patented design. The spinning disk confocal module provides exquisite resolution and optical sectioning capabilities in a wide variety of sample types.



### Take3 microvolume plate

Measure multiple 2  $\mu$ L samples at a time with the Take3 microvolume plate, used with Cytation C10. Microvolume nucleic acid and protein quantification made fast and easy.



### Labware adapters

Specialized holders can accommodate a variety of labware including microscope slides, petri dishes, tissue culture flasks and chamber slides.



Agilent

BioTek  
Cytation C10

# Technical Details



General	
Microplate types	Imaging: 6- to 1536-well plates Detection: monochromator: 6- to 384-well plates
Other labware supported	Microscope slides, Petri and cell culture dishes, cell culture flasks (T25), counting chambers (hemocytometer)
Environmental controls	Temperature control to 45 °C CO <sub>2</sub> and O <sub>2</sub> control
Shaking	Linear, orbital, double-orbital with user-selectable amplitude
Automation compatibility	BioStack, BioSpa 8 and third party products
Software	Gen5 Microplate Reader and Imager software (included) Optional software: <ul style="list-style-type: none"> <li>• Gen5 Image+: Image analysis</li> <li>• Gen5 Image Prime: Advanced image analysis</li> <li>• Gen5 Secure, Gen5 Secure Image+, Gen5 Secure Image Prime: 21 CFR Part 11 compliant features</li> <li>• Auto ROI module, spot count module</li> </ul>
Imaging	
Imaging modes	Confocal: fluorescence Widefield: fluorescence, brightfield, high contrast brightfield, color brightfield and phase contrast
Imaging methods	Single color, multicolor, time-lapse, montage, z-stacking, z-stack montage
Camera options	Hamamatsu scientific CMOS camera 16-bit Sony CMOS camera
Light sources	Confocal: six-line laser Widefield: Long-life LEDs
Objectives/capacity	1.25x to 60x/six-position automated turret
Imaging filter cubes available	Confocal: CFP, CY5, DAPI, GFP, RFP, TRITC Widefield: More than 20 filter/LED cubes available
Imaging filter cubes capacity	Confocal: four user-replaceable fluorescence cubes Widefield: four user-replaceable fluorescence cubes plus brightfield
Autofocus methods	Image-based autofocus Laser autofocus
Multimode Detection	
Detection modes	UV-Vis absorbance, fluorescence intensity, luminescence
Reading methods	Endpoint, kinetic, spectral scanning, well area scanning
Physical Characteristics	
Dimensions	18.5" H x 27" W x 20" D (46.9 cm x 68.6 cm x 50.8 cm)
Weight	122 lbs (53.3 kg)
Power	100/240VAC @50/50 Hz input Instrument: External 250 W power supply Laser light source: External 250 W power supply Hamamatsu sCMOS camera: External 75 W power supply

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