

Gen5

Технические характеристики

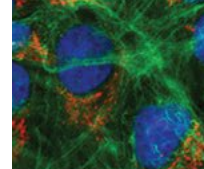
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With Gen5 and BioTek's Lionheart or Cytation imaging systems, you can acquire high quality images across a broad range of fixed and live biologies for applications in life science, drug discovery and clinical laboratories. The new, highly visual interface makes image capture, processing and analysis easy and powerful, to produce publication-ready images and data.

Image Capture

Gen5 captures images from fixed and live cell assays, tissues, whole biology and more. From large regions of interest to subcellular and intracellular details, Gen5 captures images in a batch, endpoint, time lapse sequence and z-stacks. Fluorescence, brightfield, color brightfield or phase contrast modes enable diverse applications.

Process

Brightness and contrast adjustments, background flattening and deconvolution are a few of the many image pre-processing steps available in Gen5. Z-stacks can automatically be z-projected and digital phase contrast improves the appearance of challenging images. Gen5's processing steps allow you to work within one software package without requiring extensive training.

Analyze

Gen5 analyzes cellular features such as intensity, or morphology (size, perimeter, circularity), enabling applications such as transfection efficiency, nuclear translocation or cell cycle assays where multiple cell subpopulations are present in the samples. Label-free confluence and cell counts are accomplished with the unique

high contrast brightfield mode. The add-on spot counting module enables detailed analysis of intracellular activity.

Publish

During or after image analysis, Gen5's integrated tools enable convenient annotation of important information in each image without having to export to a third-party software package. Gen5's built in movie-maker turns time lapse images into movies with a click of the mouse. Not only does Gen5 provide amazing visualization of your samples, it provides quantitative data and results from the entire experiment. Heat maps, dose response curves and multi-mode and image-based quantitative data can be combined to rapidly obtain, analyze and acquire both phenotypic and quantitative results.

KEY FEATURES

Powerful instrument control

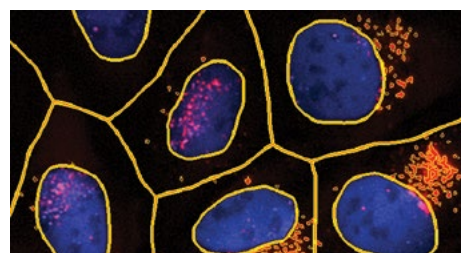
- ▶ User-trained autofocus, image-based and laser autofocus
- ▶ Automatic camera gain, exposure and LED intensity settings
- ▶ Endpoint, montage, z-stack and time-lapse imaging modes

Image pre-processing tools

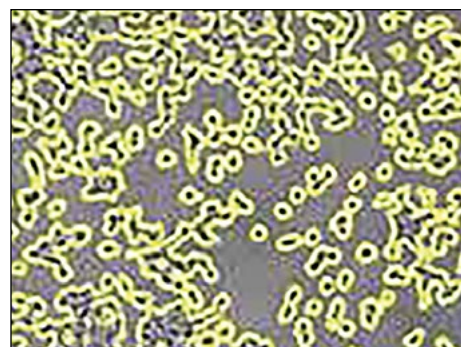
- ▶ Image deconvolution for improved visualization
- ▶ Automated flattening, smoothing, background correction
- ▶ Image stitching, z-projection
- ▶ Digital phase contrast algorithm

Image and data analysis tools

- ▶ Automated cell-counting and confluence; label-free cell counting
- ▶ Spot counting for intracellular detail analysis
- ▶ Primary & secondary masks; nucleus, cytoplasm or whole cell analysis
- ▶ Subpopulation analysis and image statistics
- ▶ EC₅₀, standard curves, kinetic analysis and more

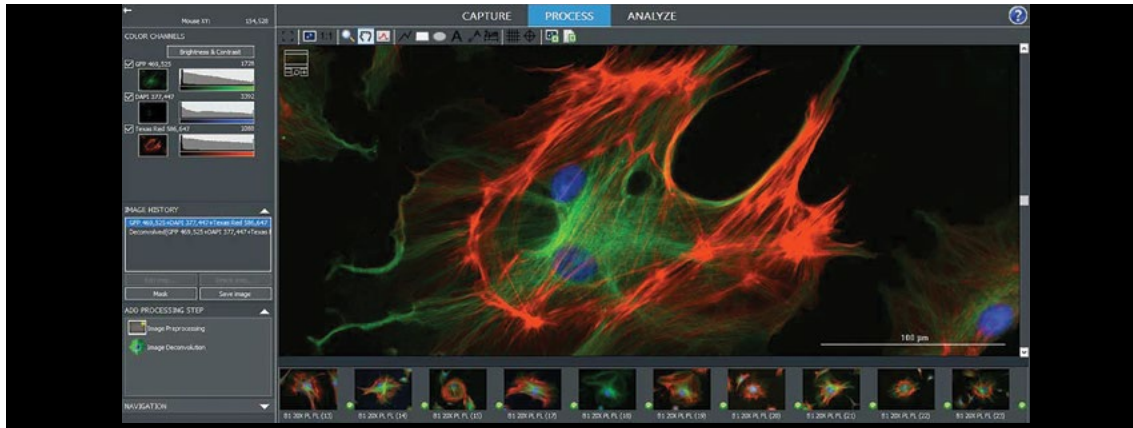
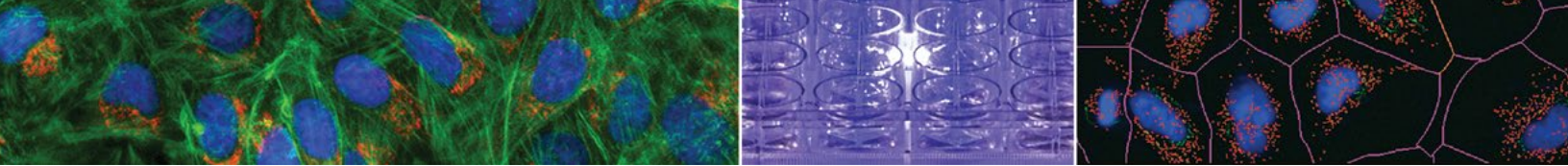


Spot counting: Intracellular details

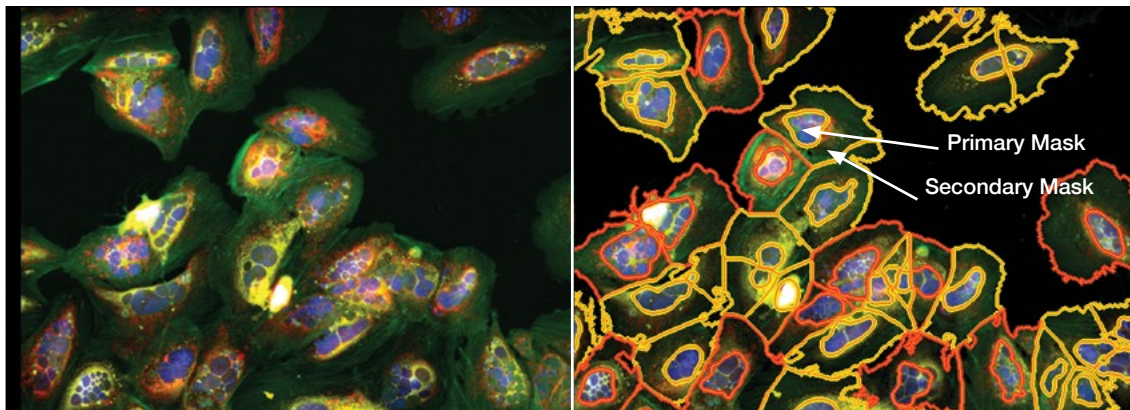


Confluence determination: High contrast brightfield

Gen5 is available in several editions for image processing and analysis. See page 49 for a comparison chart.



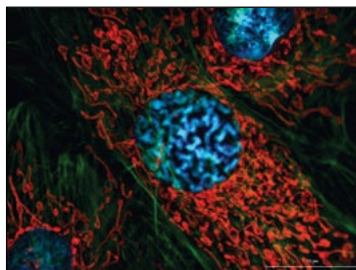
Gen5 has a highly visual interface to facilitate imaging workflows



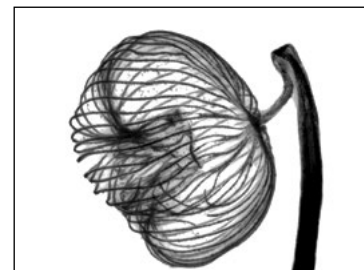
Cells treated with $0.3 \mu\text{M}$ Taxol; nuclear fragmentation visible (cells highlighted)



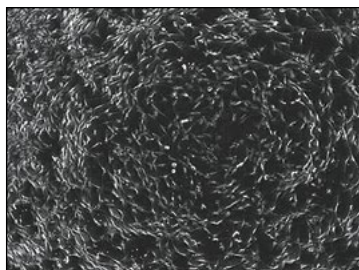
Zebrafish embryo at 2x, z-stacked and z-projected in brightfield



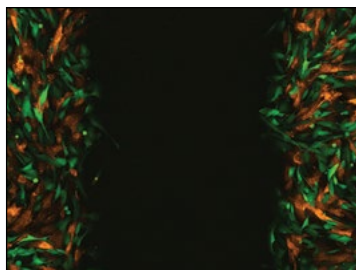
BPAC cells at 100x



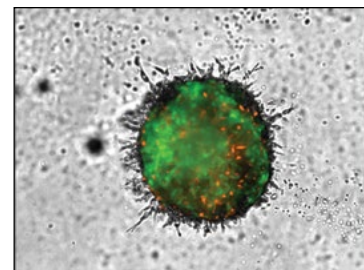
Dictyodium sporotheca, 4x montage in color brightfield, z-stacked and z-projected



3T3 cells at 4x, digital phase contrast



Fibroblasts expressing RFP and U-87 cell expressing GFP, just after scratch wound creation



U-87 Fibroblast tumoroid at 4x, 4 x 4 montage, z-stacked and stitched

LHC

liquid handling control software

Liquid Handling Control (LHC) Software allows MultiFlo FX Dispenser, EL406 Washer Dispenser and 405 TS Washer users the convenience of programming important assay-specific protocol requirements in a Microsoft® Windows® environment.

Expanded Versatility

LHC Software is a powerful yet flexible interface for use with BioTek's microplate dispensers and washers. Any programming sequence possible onboard the liquid handler may be duplicated from the computer with LHC Software. LHC also allows a virtually unlimited number of methods to be linked together for the most complex liquid handling routines. From a washer's first

prime routine, multiple microplate processes over time, ultrasonic cleaning to dissolve protein or salt crystal build-up to a final system rinse, LHC Software enables unattended operation.

21 CFR Part 11 Compliance

To meet the demands of the GxP laboratory, LHC Secure offers features to ensure compliance to 21 CFR Part 11. Flexible multi-user permission levels and electronic protocol and system audit trail signing are all available whenever additional security is required.

Custom Maintenance Reminders

To facilitate maintenance and keep a washer or dispenser in peak condition, factory recommended maintenance procedure reminders can be preset and customized

appropriately for a busy laboratory's usage and throughput requirements. LHC also supports BioStack Microplate Stacker and BioSpa Automated Incubator integrations.

Safe Record Keeping

Protocol parameters may be quickly printed for safe record keeping. Alternatively, onboard instrument protocols may be uploaded and backed up on a laboratory's network. Satellite research labs working on joint projects can be certain their wash parameters are identical for experimental integrity.

SiLA Compliant Drivers

For automated systems that require SiLA compliant integration, LHC SiLA is available.

The image shows a computer monitor displaying the LHC software interface. The main window is titled 'P-384_DILUTION.LHC - Liquid Handling Control 211'. It features a menu bar (File, Edit, Tools, Help) and a toolbar. The interface is divided into several panels: 'Instrument' (Name: EL406, Ext: COM1), 'Plate Type' (384 Well Plate), 'Protocol Name' (P-384_DILUTION), 'User Protocol Version' (2.0), and 'Protocol Comments'. A central 'Add Step' panel contains buttons for various actions like 'W-Wash', 'W-Aspirate', 'W-Dispense', 'W-Rinse', 'W-AutoClean', 'W-Plate', 'P-Dispense', 'P-Rinse', 'P-Purge', 'S-Dispense', 'S-Rinse', and 'Shake/Soak'. A 'Protocol Steps' list is visible on the right, including steps like 'BioStack delivers a plate from the input stack', 'P-Dispense 2 µL, High flow rate, 1x1, cassette', 'W-Wash 100 µL of buffer A for 3 cycles', and 'BioStack returns the plate to the output stack'. A 'Step Details' panel for the 'W-Wash' step is shown in a callout box, listing parameters such as 'Pre-dispense before washing: No', 'Bottom Wash: No', 'Number of Wash Cycles: 3', 'Wash Format: Plate', and 'Sectors to wash: 1, 2, 3, 4'.

Protocol Steps

- Remark: Exchange buffer after incubation
- W-Wash 100 µL of buffer A for 3 cycles**
- S-Dispense 50 µL using syringe A without pre-dispense
- Move carrier home. Shake for 00:05. Soak for 00:10
- P-Dispense 10 µL, High flow rate, Any cassette
- P-Dispense 30 µL, High flow rate, Any cassette
- BioStack returns the plate to the output stack

Step Details

W-Wash

- Pre-dispense before washing: No
- Bottom Wash: No
- Number of Wash Cycles: 3
- Wash Format: Plate
- Sectors to wash: 1, 2, 3, 4

Intuitive StepWise protocol creation for ultimate flexibility

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