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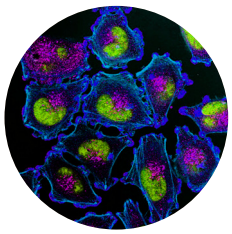
Perspecta High Content Imaging Systems for Cell & Organoid Research: Widefield & Confocal

PORTFOLIO INTRODUCTION

Galatek's high content imaging portfolio covers both widefield and confocal workflows spanning image perception through decision making. Both widefield and confocal imaging systems are equipped with a high-resolution camera that supports a range of applications and flexible upgrades.

AI-BASED TARGET RECOGNITION & ANALYSIS



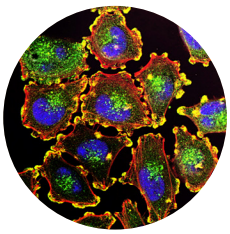


Image Analysis
Image Acquisition > Image Processing > Target Recognition

Data Analysis
Feature Measurements > Result Files > Data Visualization

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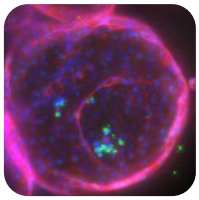
Perspecta High Content Imaging System

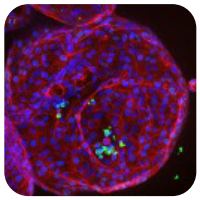
Galatek's Perspecta High Content Cell Imaging System pairs a complementary-metal-oxide-semiconductor (CMOS) high-resolution camera with digital software-based processing in a flexible and user-friendly configuration to power high performance, high content imaging.

PerspectaCx High Content Imaging System

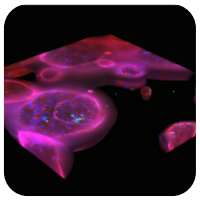
Galatek's PerspectaCx High Content Cell Imaging System is equipped with a high-resolution scientific CMOS (sCMOS) camera and high-speed pinhole confocal spinning disk, which enables precise acquisition and greater insight into 3D cellular structures.



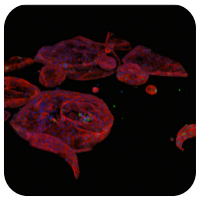
Wide-field Z-Stack projection



Confocal Z-Stack projection



Wide-field 3D reconstruction



Confocal 3D reconstruction

Widefield vs. confocal imaging of 3D gastric cancer organoids.

3D gastric cancer organoids were imaged using both widefield and confocal acquisition modes and rendered as either Z-stack projections (maximum intensity projection of a full depth series) or 3D reconstructions. Blue: 405 channel, nucleus - DAPI; Green: 488 channel, antibody ki67 - Nuclear non-histone/cell proliferation marker - AF488; Red: 561 channels, Actin-phalloidin - AF568

Takeaway:

Confocal acquisition reduces out-of-focus background signal compared to widefield, producing sharper structural detail and clearer separation of cellular boundaries in both projection and 3D reconstruction views.

PORTFOLIO FEATURES

Features	Benefits
Fast imaging and processing: Simultaneous acquisition and analysis of a full 96-well plate scan (single field of view per well, 2 channels) in ≤ 2.5 min	• Faster time-to-result, with data available immediately after scanning rather than requiring a separate analysis step • Enables higher-throughput screening and more samples or conditions processed per experiment
Precise environmental controls for stable long-term imaging: Triple precision control of temperature, humidity, and CO2, with synchronized image data acquisition	Supports stable, undisturbed live-cell growth over extended time courses for reliable long-term and time-lapse observation
Infrared laser & image-based autofocus	Fast, reliable focusing on complex consumables and samples, reducing manual refocusing and imaging errors
Configurable Image Analysis Toolkit: 60+ customizable and configurable image analysis commands	Adaptable analysis workflows that can be tailored to diverse research applications without separate software requirements
AI-based target recognition and analysis: Image acquisition, processing, and target recognition paired with feature measurements, result files, and visualization	Automated target identification and quantification delivers analysis-ready data and visuals without manual image review
Integrates with lab automation systems and Galatek's laboratory management platform	Enables a connected, end-to-end lab workflow from acquisition through automated data management

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PRODUCT PARAMETERS

	Perspecta High Content Imaging System	PerspectaCx High Content Imaging System
Optical system	Widefield imaging	Confocal imaging, widefield imaging (switchable)
Imaging modes	Brightfield, color brightfield, fluorescence, digital phase contrast, live cell dynamic imaging, Z-stack scanning	
Imaging methods	Digital confocal	50μm pinhole spinning disk confocal
Fluorescent channels	5 channels (405 nm, 488 nm, 561 nm, 638 nm, 730 nm)	
Light source	LED	Brightfield LED, fluorescence laser
Camera	CMOS	sCMOS
Camera resolution	4024 × 3036 (12 MP)	6224 × 4168 (26 MP)
Pixel size	1.85 μm	3.76 μm
Camera frame rate	Up to 31 fps	Up to 110 fps
Objective magnification	4-position motorized turret, 2x – 60x (apochromatic or long working distance objectives are optional)	
Stage travel	80 mm × 120 mm × 6 mm (X/Y/Z)	
Stage repeatability	X/Y 0.4 μm; Z 0.1 μm	
Focusing modes	Infrared laser focusing, image focusing	
Consumable types	6 – 1,536 well plates, culture dishes, slides	
Dimensions	640 mm x 345 mm x 490 mm	820 mm x 445 mm x 500 mm
Operating environment	Temperature 5°C – 40°C; humidity ≤ 80%	
Live cell culture module	Supports temperature, humidity, CO2 concentration (optional)	
Integration with laboratory data management systems	API available	

Whether the workflow calls for fast, broad-coverage widefield imaging or the added optical sectioning of confocal, both Perspecta platforms share the same core architecture: objective range, stage precision, and live-cell environmental control. The choice of instrument comes down to sample complexity and imaging depth rather than a tradeoff in performance. The Perspecta suits routine 2D and monolayer workflows, while the PerspectaCx is built for 3D organoids, spheroids, and other structurally complex samples where z-stack clarity matters most.

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