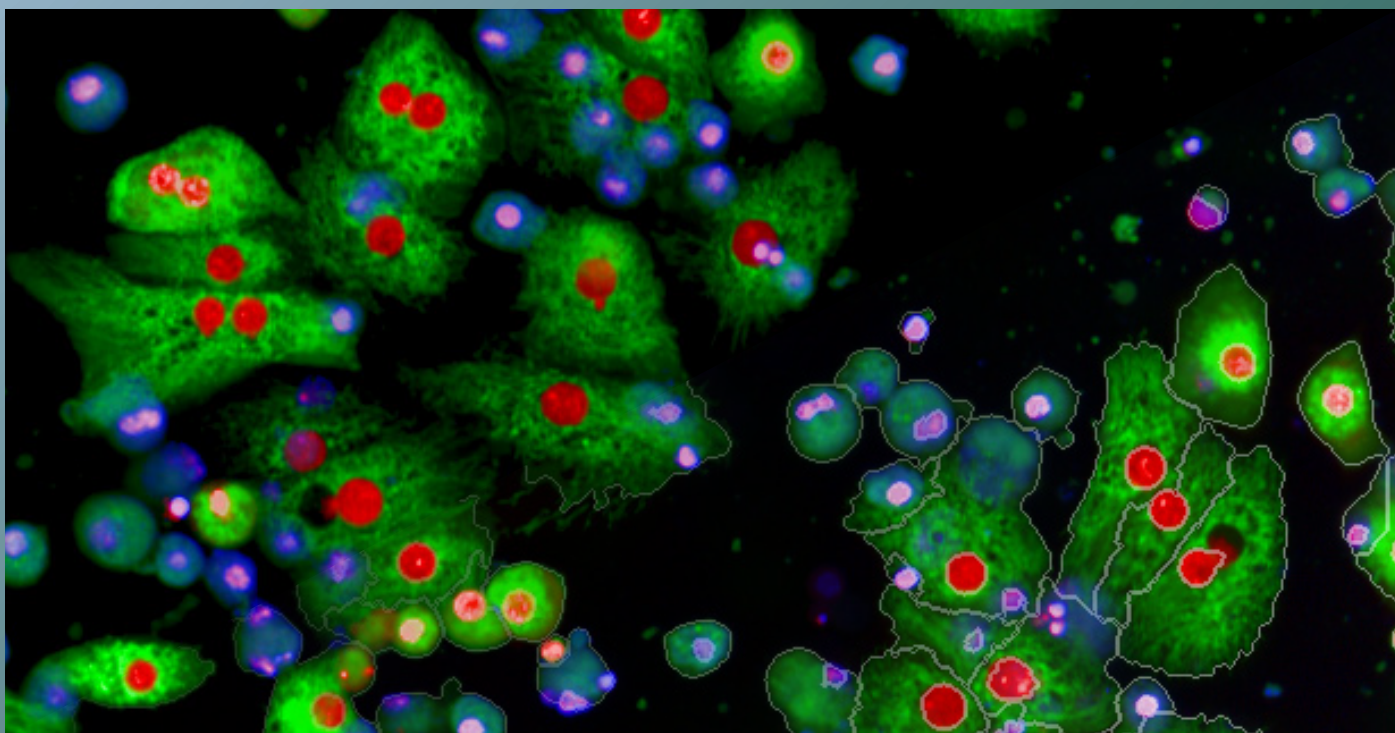


HUMAN HEALTH

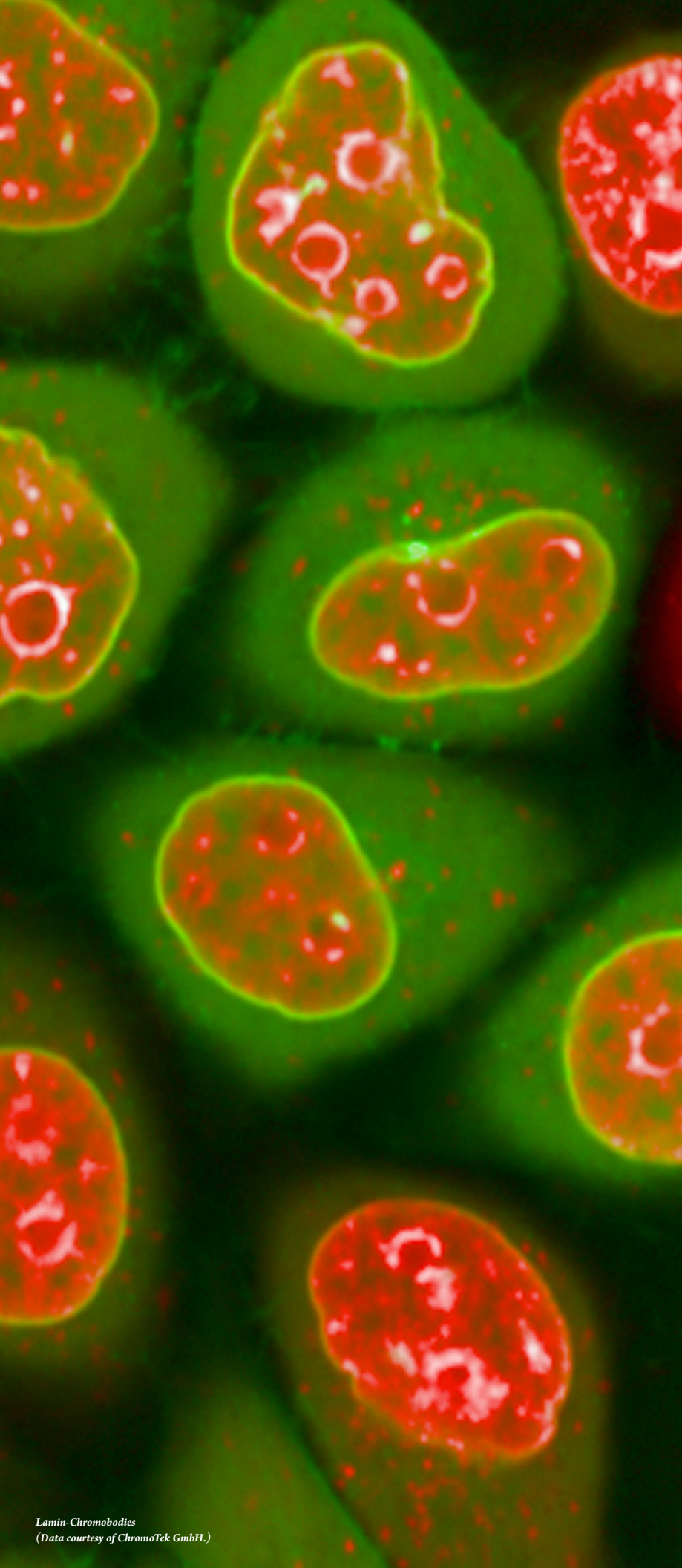
ENVIRONMENTAL HEALTH



HIGHER CONFIDENCE HIGH CONTENT SCREENING



Opera® High Content Screening System



FROM IMAGES TO INFORMATION TO UNDERSTANDING

When it comes to understanding complex biological mechanisms, both quality and quantity of data are important. The knowledge gained by directly investigating cellular response through large scale imaging and analysis can significantly accelerate disease research and lead discovery.

Over more than a decade of leadership in high content screening (HCS)—and many millions of compounds screened—we've continued to learn, to listen, and to apply our scientific expertise to developing faster, more sensitive and more versatile microplate imaging solutions for demanding, high throughput applications. Not just hardware, but a complete HCS portfolio that includes:

- Opera® High Content Screening System—the world's most versatile, and most proven, solution for high throughput, high content screening
- Operetta® High Content Imaging System—the power of high throughput biology at research scale
- A full range of automation capabilities—including our cell::explorer™ Automation Platform for even higher throughput and data quality
- Columbus™ Image Data Management and Analysis System—for images from any source
- Velocity® 3D Image Analysis Software — universal solution for 3D image analysis
- HCS-optimized reagents and microplates—including CellCarrier™ plates engineered specifically for the Opera system
- Expert, global service and applications support—our dedicated team of lab- and field-based application specialists, plus an exclusive HCS support portal



Opera High Content Screening System

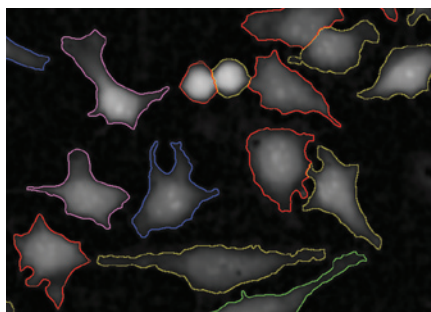


The Opera High Content Screening System combines superior image quality with maximum speed and throughput—plus robust, reliable performance across the complete range of high content assay types.

HIGHER THROUGHPUT HIGHER PERFORMANCE HIGHER CONFIDENCE

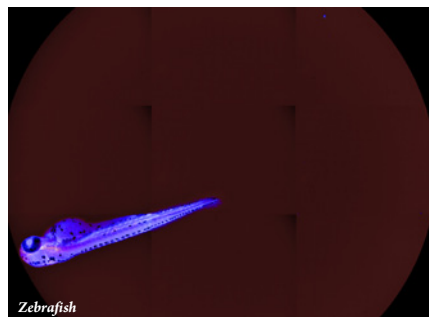
Incorporating advanced, industry-leading optical technologies, PerkinElmer's Opera system continues to be the world's most proven confocal microplate imaging solution for high throughput High Content Screening.

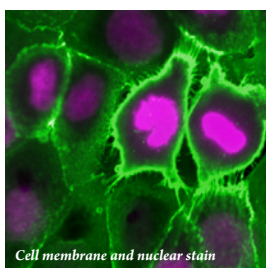
The Opera system has always been known for its speed and breathtaking image quality. Now researcher-friendly analysis software helps you turn that image data into statistically relevant information more quickly than ever before. Versatile, scalable and easily automatable, the system is well-suited both for primary and secondary screening campaigns.



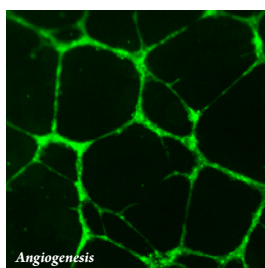
Brightfield capability with digital phase contrast lets you image and segment cells that have not been fluorescently labeled, and protects delicate live cells by minimizing the amount of light reaching them.

Low magnification objective (4X air) lets you scan entire wells with just a few images to get an overview of the well and choose an area to examine in detail. This image has been constructed from nine images stitched together. (Data courtesy of Evotec AG)

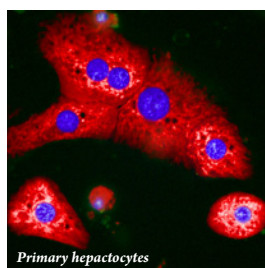




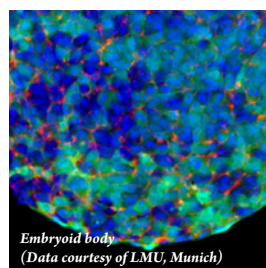
Cell membrane and nuclear stain



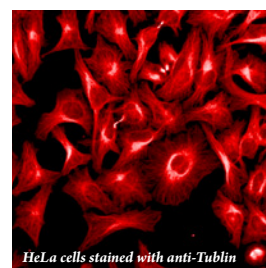
Angiogenesis



Primary hepatocytes



Embryoid body
(Data courtesy of LMU, Munich)



HeLa cells stained with anti-Tubulin

Faster answers

The Opera system's ultra-fast image acquisition and powerful data processing capabilities translate into immediate results. You can combine simultaneous and sequential imaging, acquire and analyze at the same time, and visualize data during acquisition.

- Ultra-high speed, parallel multi-color data acquisition
- High speed online image analysis powered by parallel computing and multi-core processors
- Online image analysis capability
- High throughput capability—over 100,000 image sets per day
- Integrates seamlessly with PerkinElmer automation solutions for fully automated workflows with the cell::explorer Automation Platform and true 24/7 operation
- Integrates with third party automation solutions, including plate handling, liquid handling, compound transfer, plate storage, incubation and washing

Highest quality data

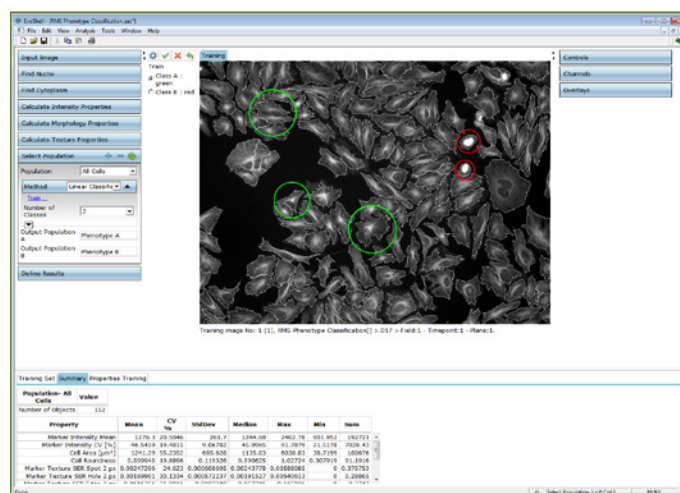
Even at highest speed the Opera system delivers exceptional image quality for more reliable data and more confidence in your results.

- True point-scan confocality using laser-based excitation and a microlens-enhanced Nipkow spinning disk
 - Eliminates background fluorescence
 - Significantly improves signal-to-noise performance
 - Minimizes photobleaching and phototoxicity for live cell assays
 - Enables homogeneous assays
- Proprietary, fully automated high NA water immersion objectives ensure highest resolution for studying subcellular features
- Multiparameter, simultaneous four-color detection

Unrivalled flexibility

The Opera system supports the complete spectrum of HCS applications, from the simplest to the most sophisticated. You can tailor a system that's exactly right for the needs of your lab, and easily reconfigure to meet changing requirements.

- Ideal for both fixed and live cell applications
- Captures both very fast and very long kinetic measurements—from seconds (e.g., Calcium Flux assays) to days (e.g., Cell Cycle assays)
- Lets you analyze cells by shape, size, behavior and texture
- On-board dispensing enables you to set up kinetic assays that require compound addition and mixing
- Environmental Control Unit precisely regulates temperature, humidity and CO₂



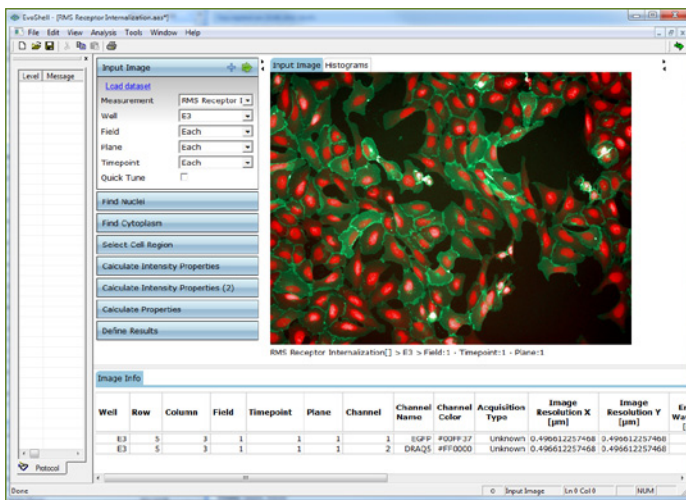
The Opera system's proprietary, PhenoLOGIC™ machine-learning technology makes it easy to create optimized algorithms. Just click on cells or regions to teach the software to recognize different populations or image regions.

Shorten the path to understanding with powerful software

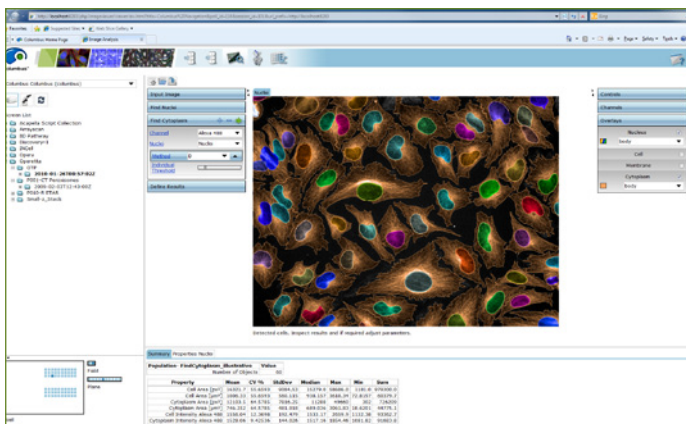
Acquiring high quality images is only the beginning. You need to be able to quickly and easily turn your image data into unbiased, statistically relevant results.

The Opera system's Acapella® High Content Imaging and Analysis Software offers rapid online image data processing and thoroughly flexible analysis for all high content cellular applications, including multi-parametric multiplex assays. Non-programmers will appreciate the software's easy-to-use "building block" methodology and library of pre-tested application scripts, which can be readily modified to meet the needs of specific workflows. Power users can take advantage of the system's open architecture versatility by scripting their own custom algorithms.

For a seamless workflow from primary to secondary data analysis in high throughput screening applications, you can export results automatically or in batches into our Columbus Image Data Management and Analysis System for further analysis. Data can also be exported to third party platforms such as Accelrys Pipeline Pilot®, IDBS ActivityBase™ XE and Genedata Screener®.



Flexible, powerful Acapella software is optimized for high speed online image analysis and for processing large data sets.



The solution of choice for any HCS application

Systems biology, RNAi screening

Analysis of gene expression, gene activity and protein regulation, cell signaling and pathway screening, target identification.

Drug discovery: Primary and secondary screening, follow-up testing

Ligand binding, receptor activation and desensitization, recruitment of signaling molecules, membrane ruffling, endocytosis, translocation, calcium flux, second messengers, ion channels, cell cycle.

Toxicity testing

Cell viability, cell differentiation, cell proliferation, cytotoxicity, apoptosis, transporter phenomena, membrane potential phospholipidosis, hepatosteatosis, peroxisome quantification, mitochondrial mass, nuclear fragmentation.

Stem cell screening

Reprogramming, proliferation, differentiation.

Phenotypic assays

Neurite outgrowth, cell differentiation, cell adhesion and spreading, cytoskeletal rearrangement, migration, invasion.

Infectious diseases

Virus infection, bacterial infection, monitoring infection rates.

...and more.

Columbus Image Data Management and Analysis System lets you conveniently access, analyze, re-analyze, store, share and manage your Opera system's image data and associated metadata.

Results. Smarter. Faster.

With a growing emphasis on translational insight, it is more important than ever to be able to examine the molecular mechanisms of disease and translate your *in vitro* models into *in vivo* results. PerkinElmer offers leading solutions and renowned expertise in assays, imaging and informatics that will help you bring it all together. Whether working in a well, cells or small animals, now you can focus on your science, gain insight sooner and succeed faster.

Visit www.perkinelmer.com/Opera for more information.

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For a complete listing of our global offices, visit www.perkinelmer.com/ContactUs

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