PerkinElmer

PerkinElmer, Inc. is a global leader committed to innovating for a healthier world. Our dedicated team of about 11,000 employees worldwide is passionate about providing customers with an unmatched experience as they help solve critical issues especially impacting the diagnostics and discovery and analytical solutions markets.

PerkinElmer's comprehensive portfolio of technologies helps life sciences researchers better understand diseases and develop treatments. Scientists and clinicians can gain biological insights to improve outcomes through our discovery instruments and reagents, quantitative pathology platform, informatics software and lab services.

PerkinElmer's Operetta CLS™ high-content analysis system enables scientists to uncover deep biological understanding from everyday assays and innovative applications. The system features a unique combination of technologies to deliver the speed, sensitivity and resolution needed to reveal fine subcellular details.

The Opera Phenix™ high-content screening system is designed for high-throughput phenotypic screening and cellular analysis, and is ideal for complex disease models such as live cells, primary cells and 3D cell culture models.

Additional information is available at www.perkinelmer.com.

IN THE SPOTLIGHT: FOCUS IN ON HIGH-CONTENT ANALYSIS

Operetta CLS High-Content Analysis System

Challenged to develop more predictive cellular assays? 3D cell cultures bridge the gap between 2D cell cultures and animal models, and are ideal for testing the biological processes that occur in vivo. With Operetta CLS, you can perform 3D cell culture experiments and analyze your samples in 3D to reveal relevant microarchitectures and microstructures.

Find out more at www.perkinelmer.com/3DCellSolutions

IT'S LIGHTING THE WAY TO A NEW LEVEL OF UNDERSTANDING

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High-Content Analysis (HCA) merges the benefits of high-throughput automation and unbiased analysis with microscopic imaging. This powerful – and now highly accessible – technique allows researchers, whether in small academic or large commercial labs, to collect and quantify reproducible multiparametric cellular data. HCA has expanded into all corners of life science since its traditional beginnings in drug discovery; HCA techniques are now used widely and in a diverse range of scientific research areas including oncology, neuroscience, infectious diseases, developmental biology, and toxicology, to name just a few. HCA can be applied across multiple scales from quantification of subcellular protein distribution through to analyzing the organization of 3D organoids. The combination of high sample throughput with multiparametric image and multivariate data analysis enables the detection of even subtle phenotypic changes that isn’t possible with traditional laboratory techniques.

### IN THE SPOTLIGHT: FOCUS IN ON HIGH-CONTENT ANALYSIS

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<th>APPLICATIONS</th>
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<tr>
<td><strong>FOR MICROSCOPISTS</strong></td>
<td>Get quantitative results from your cell images. Automate your workflow and analyze more samples.</td>
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<td><strong>FOR FLOW CYTOMETRISTS</strong></td>
<td>Put your skills into biological context and increase your sample throughput. Quantify morphology, cellular function and activity.</td>
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<td><strong>FOR GENOMIC RESEARCHERS</strong></td>
<td>Link the phenotype to the genotype. See transcription in cellular context. Visualize DNA sequences in chromosomes.</td>
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<tr>
<td><strong>FOR PROTEIN BIOCHEMISTS</strong></td>
<td>Increase your throughput. See the hierarchy of proteins in individual cells. Distinguish activity and abundance in a single cell.</td>
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### HIGH-CONTENT ANALYSIS

- **CELL BIOLOGY RESEARCH**
  - HCA can be used to analyze the basic mechanisms underlying cell proliferation, cell migration, cell invasion, and cell spreading. For example, specific genes and activities in cell differentiation and proliferation, and the genes involved in cell division and spread which are analyzed using HCA.

- **DISEASE RESEARCH**
  - Complex models for diseases ranging from infectious diseases to metabolic diseases, to cancer and even neurological disorders have been successfully analyzed by HCA. Exploring disease mechanisms using HCA can involve simple models, such as infection of cell lines with bacteria, to complex disease models using patient primary cells or interrogating the interaction of cancer spheroids with T cells in extracellular matrices.

- **DRUG DISCOVERY**
  - HCA can be used in all stages of drug discovery including target discovery and validation. It has been used successfully for target based compound screening and it is also the tool of choice for phenotypic drug discovery strategies, as it allows the use of complex cell models at high throughput and provides detailed phenotypic fingerprints. In these high-throughput applications, HCA is more commonly known as high-content screening (HCS).

### DID YOU KNOW?

- **G-protein-coupled receptors** are the targets of many of today’s medicines.
- **Cell migration** is integral to many processes, and is studied in oncology to determine tumor invasiveness and in the development of therapies for cardiovascular disease.

- **Correlation of phenotypic changes to genotypes** is a key application of high-content analysis.

### APPLICATIONS

- **CELL BIOLOGY RESEARCH**
- **CELL BIOLOGY RESEARCH**
- **CELL PHYSIOLOGY**
- **CELL PHYSIOLOGY**
- **DISEASE RESEARCH**
- **DISEASE RESEARCH**
- **DRUG DISCOVERY**
- **DRUG DISCOVERY**

###Did you know?

- **Phenotypic drug discovery** is an integral part of today’s drug development. It involves the identification of drugs that exhibit a desired phenotype, such as the ability to inhibit a specific cellular process.

###IN THE SPOTLIGHT: FOCUS IN ON...

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- **HCA is more commonly known as high-content screening (HCS).**

###IN THE SPOTLIGHT: FOCUS IN ON...

- **High-throughput applications, HCA is more commonly known as high-content screening (HCS).**

Images provided by PerkinElmer, 1. Cells courtesy of Dr. Somponnat Sampattavanich, Department of Pharmacology, Faculty of Medicine, Siriraj Hospital, Thailand. 2. Embryonic rat dorsal root ganglion neurons courtesy of Dr. York Rudhard, Evotec AG. www.cellularimaging.com

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