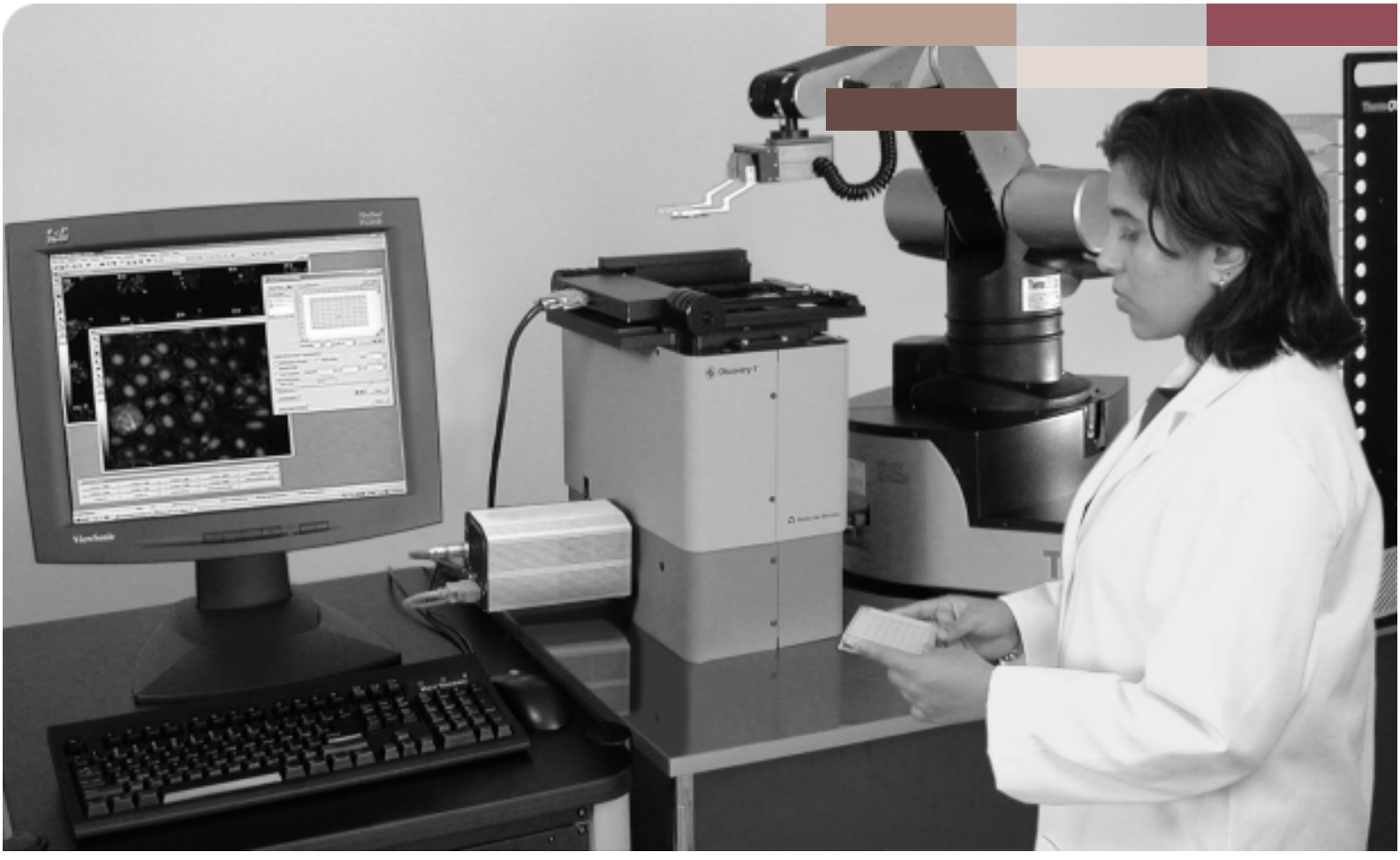
Molecular Devices

Discovery-1™

HIGH CONTENT SCREENING SYSTEM

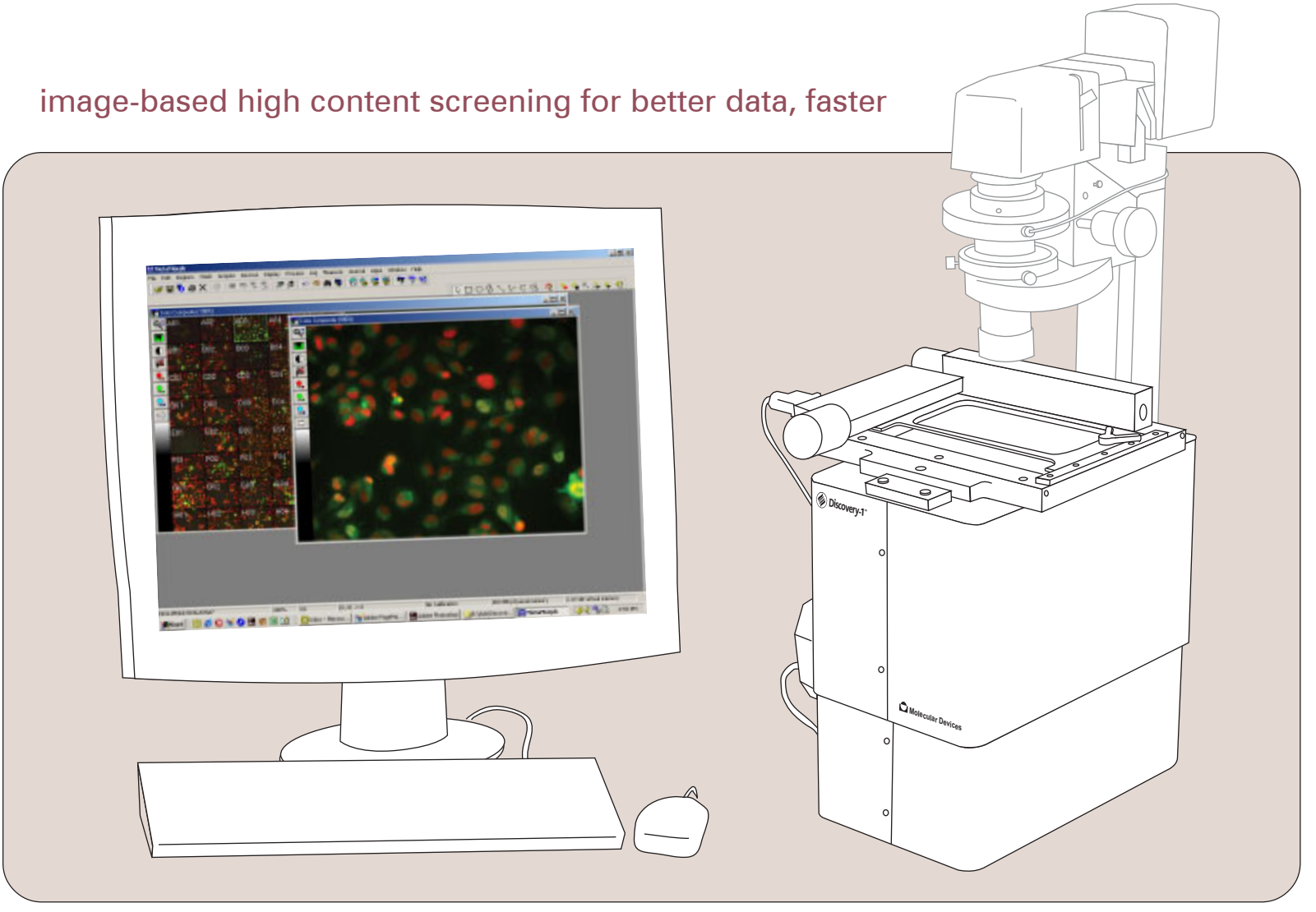


Drug discovery requires specific information about how compounds affect biological mechanisms. Data gathered with image analysis techniques offer new insights into these interactions and can reduce or eliminate bottlenecks during the discovery process.

The Discovery-1 High Content Screening System from Molecular Devices accelerates the discovery process with advanced imaging technology that provides high levels of detail about cell-based assays. The system's intuitive and robust software includes turn-key analysis routines to simplify the task of identifying protein locations, translocation, and expression.

The Discovery-1 has unmatched flexibility and open architecture for developing custom analysis routines. By fully automating image acquisition and analysis, the Discovery-1 brings increased throughput with improved speed and efficiency.

image-based high content screening for better data, faster



FLEXIBLE AUTOMATED IMAGING

The Discovery-1 is the only system to offer both simplicity and convenient flexibility for image-based high content screening applications. Select a standard image analysis routine, or develop custom protocols using the system's intuitive software. Implement high throughput strategies by leveraging the system's scalable architecture.

ROBUST ANALYSIS

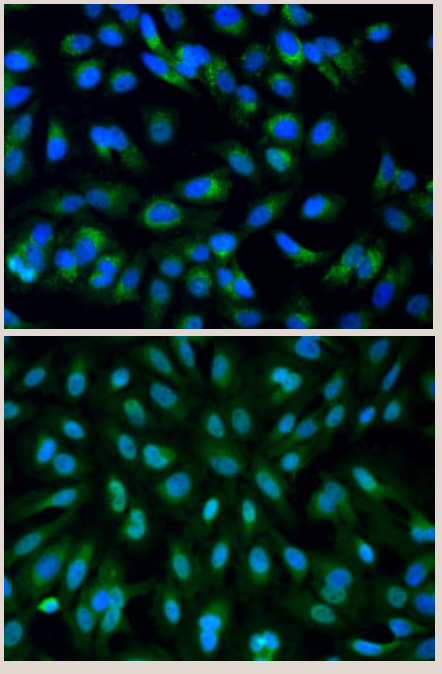
- → Visualize and analyze cell populations
- → Identify sub-cellular protein localization
- → Perform multi-parameter analysis

SUPERIOR AUTOMATION

- → Rapid acquisition of high content screening data
- → Open, scalable architecture for higher throughput and easy integration with robotics
- → High-speed laser auto-focus
- → Up to eight different fluorophores per assay
- → A wide range of acquisition configurations with six objectives
- → Quick and easy data archiving

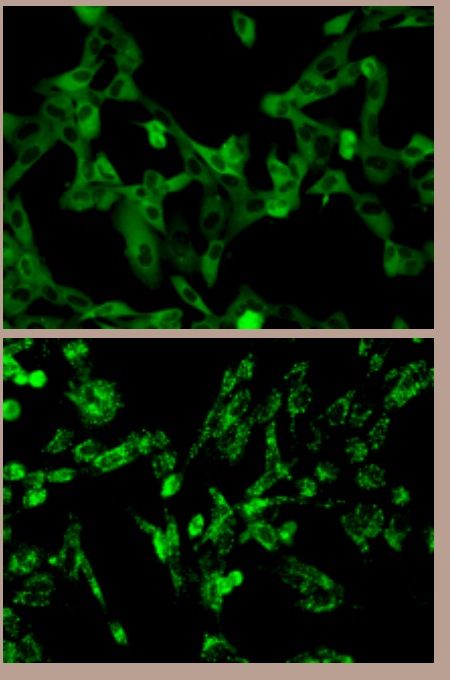
standard set of analytical routines

protein translocation



quantification and localization of protein movement

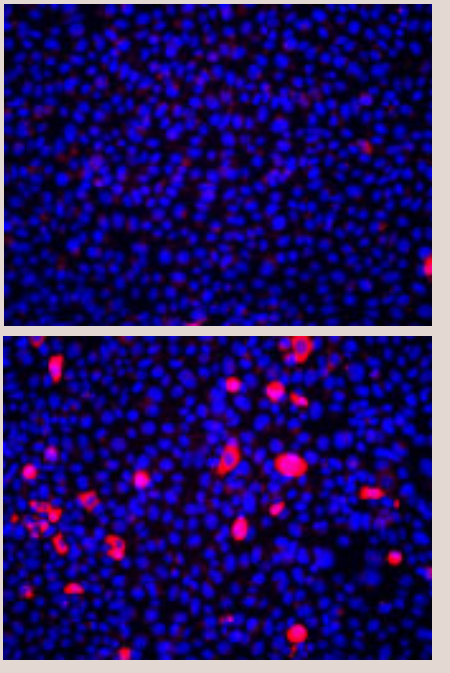
G protein-coupled receptors



unstimulated (top) stimulated (bottom)

data courtesy of Norak Biosciences, Inc

protein-fragment complementation



Odyssey Thera, USA is using protein-fragment complementation assays (PCA) to map cell signaling pathways. The Discovery-1 system enables screening of tens of thousands of potential interactions to identify novel targets for drug discovery.

A comprehensive set of analytical routines is standard with the Discovery-1 system.

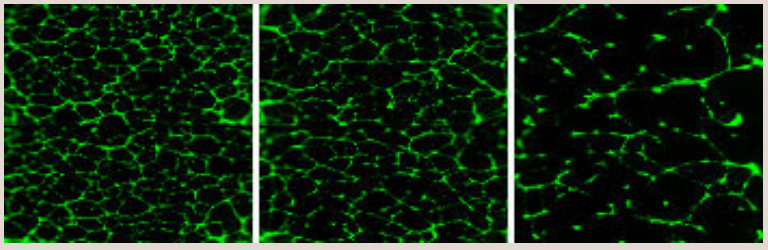
- Neurite outgrowth
- Molecular translocation
- Angiogenesis
- Receptor internalization for GPCRs
- Cell viability/apoptosis
- Proliferation
- Adipogenesis
- Cytoskeletal reorganization
- Endocytosis/Exocytosis
- Protein synthesis, degradation, and localization
- Motility
- Kinetics

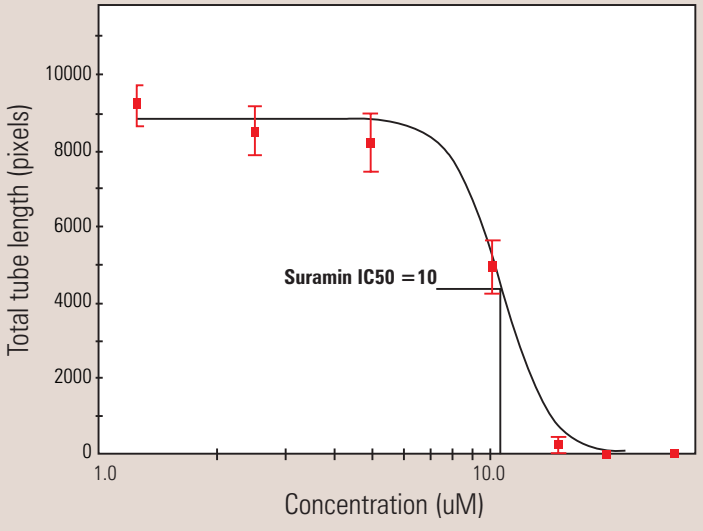
time saving labor saving better results higher throughput

angiogenesis assay

inhibition of HMEC-1 tube formation by suramin

BD BioCoat™ Angiogenesis System





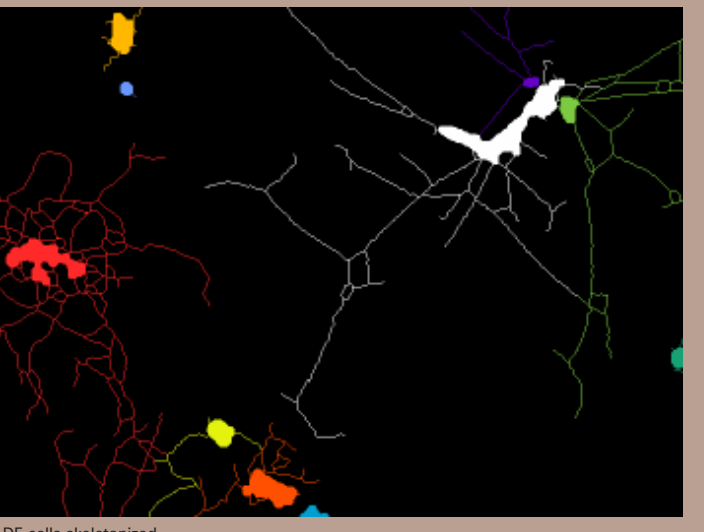
data courtesy of BD Biosciences

ADVANTAGES OF DISCOVERY-1

- Ability to acquire multiple images throughout the depth of sample
- Better quality results due to ability to collapse multiple planes into one image, resulting in an in-focus image for analysis
- More complete analysis, including measurements such as tube length, number of branch points, and more

neurite outgrowth assay

DF cells, courtesy of Rinat Neuroscience Corporation



DF cells skeletonized

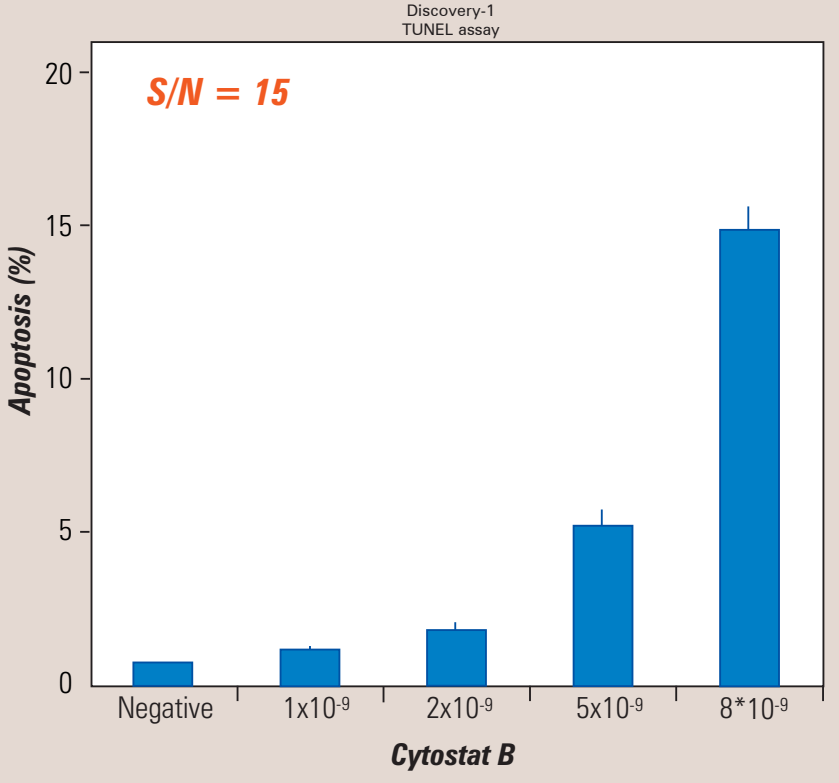
	A	B
1	Cells	**DF**
2	Number of Cells	10
3	Total Outgrowth	7633.72
4	Mean Outgrowth Per Cell	763.372
5	Total Processes	69
6	Mean Processes Per Cell	6.9
7	Total Branches	238
8	Mean Branches Per Cell	23.8
9	Total Cell Body Area	12725
10	Mean Cell Body Area	1272.5
11	Straightness	0.8926
12	Cells w/Significant Growth	10
13	%Cells w/Significant Growth	100
14		

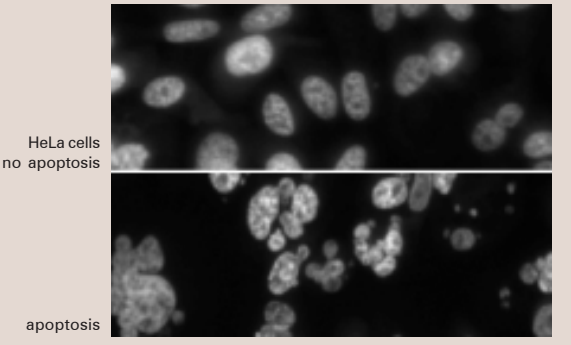
ADVANTAGES OF DISCOVERY-1

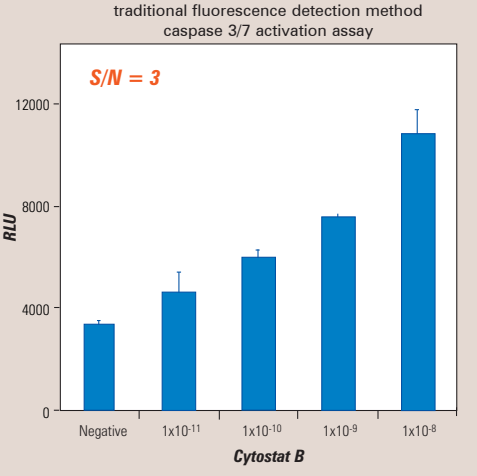
- → Ability to measure individual cells as well as entire population
- → More complete analysis such as measurement of total neurite outgrowth, total branches, straightness, and more

time saving labor saving better results higher throughput

apoptosis assay





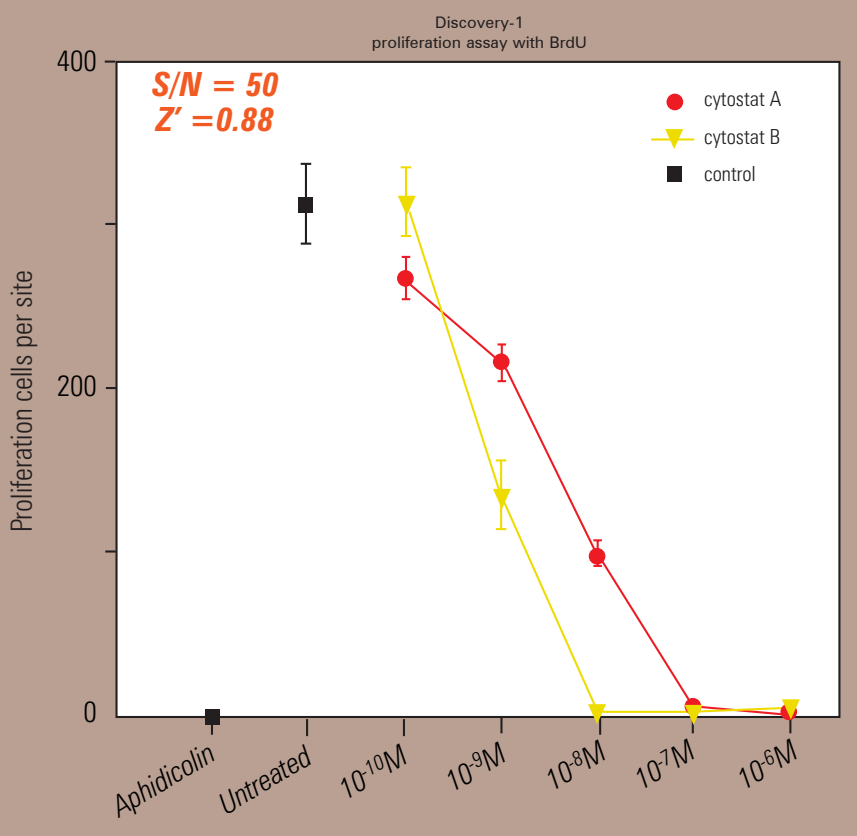


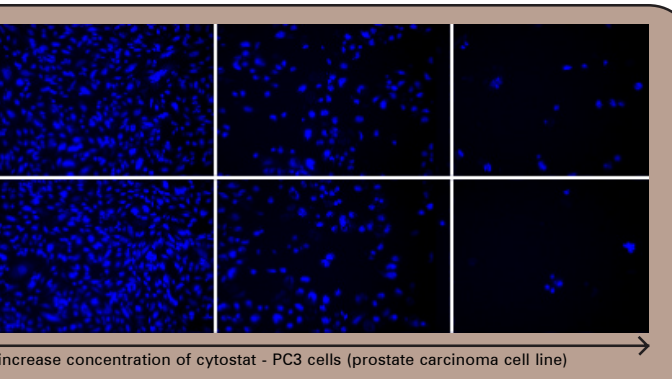
data courtesy of Stefan Prechtl, Schering AG, Berlin

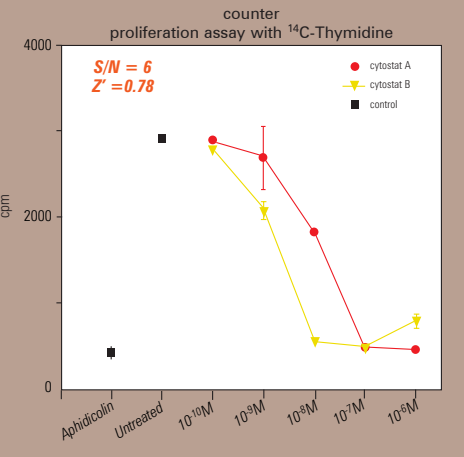
ADVANTAGES OF DISCOVERY-1

- → Measurement of apoptosis at the single cell level or whole population
- → Increased dynamic range; better signal-to-noise ratio (S/N)
- → Greater sensitivity

proliferation assay of PC3 cells







data courtesy of Stefan Prechtl, Schering AG, Berlin

ADVANTAGES OF DISCOVERY-1

- → Increased dynamic range; better signal-to-noise ratio (S/N)
- → No radioactive material
- → Sensitivity is more than eight times better

time saving labor saving better results higher throughput

scalable system for increased throughput

multiple Discovery-1 systems for higher throughput

CONNECTING MULTIPLE SYSTEMS INTO A SINGLE PLATFORM

The scalable architecture of the Discovery-1 enables easy integration of several optical imagers and robotics systems into a single platform for high throughput, high content screening.

PlateExchange software enables automated plate loading, barcode scanning, and multiple assays with unattended operation. A generic robotics interface provides the flexibility required for integrating one or more Discovery-1 systems into an existing automation platform.

features

SPECIFICATIONS

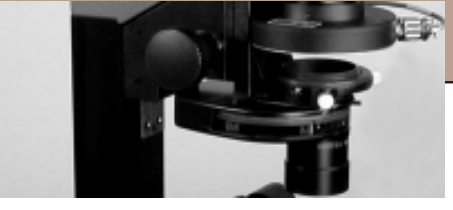
- Proprietary optical platform with 14-inch footprint
- Fully integrated imaging software
- Laser auto-focus
- High-speed 5-position dichroic wheel
- Optimized 10-position filter wheels (excitation, emission, and neutral density)
- Filter sets for most standard assays
- Fully automated 6-position objective turret (2x, 4x, 10x, 20x, 40x)
- High intensity arc lamp for fluorescence excitation
- High-speed scientific grade CCD camera
- Microsoft® SQL and ORACLE® database archiving and retrieval
- One day of acquisition training and two days of analysis training
- One-year warranty

OPTIONS

- Additional filter sets
- Additional objectives
- Transmitted light
- Extended service contracts
- Image server
- Analysis workstations

ROBOTIC OPTIONS

- Thermo CRS CataLyst Express™
- Hudson Control PlateCrane™
- PlateExchange software
- Generic robotics interface
- Barcode reader



time saving labor saving better results higher throughput

The Discovery-1 High Content Screening System was developed by Universal Imaging Corporation, a subsidiary of Molecular Devices. UIC provides comprehensive solutions to the academic, research, and pharmaceutical drug discovery markets enabling both cell-based and sub-cellular assays. Molecular Devices Corporation is a leading developer of high-performance, bioanalytical measurement systems that accelerate and improve drug discovery and other life sciences research.

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