

High Content Bioimaging

Overview

○ Apoptosis:

- ✓ ROS and Superoxide radical production
- ✓ Mitochondrial membrane potential
- ✓ Mitochondrial calcium concentration
- ✓ Plasmatic membrane permeability
- ✓ Chromatin Condensation

○ Cell Assay :

- ✓ Cellular proliferation
- ✓ Autophagy
- ✓ Senescence
- ✓ Necrosis
- ✓ Nuclear translocation
- ✓ Protein stability
- ✓ Protein phosphorylation

Protocols

Fundación MEDINA offers HCS technology

Instrument

High Content Screening (HCS) BD Pathway 855[®]

Confocal Leica SPE plus HCS A module

BD ACCURI[®]C6 Flow Cytometer

Analytical Methods

Fluorescence assay

Our complete cellular imaging workflow integrates instruments and software to acquire and analyze images, then process, store, and manage the experimental data. All these screening solutions offer the advantages of intuitive acquisition, automated image analysis, turnkey cellular informatics, and the seamless integration of the hardware and software components, which eliminates manual data manipulation or transfer found in other less sophisticated imaging workflows.

Cell imaging can reveal effects that would be overlooked by other cell assay approaches.

The selection of molecules based on a cellular phenotype does not require a priori knowledge of the biochemical targets that are affected by compounds and while this may be a benefit for compound discovery, the biochemical target itself must be subsequently identified.



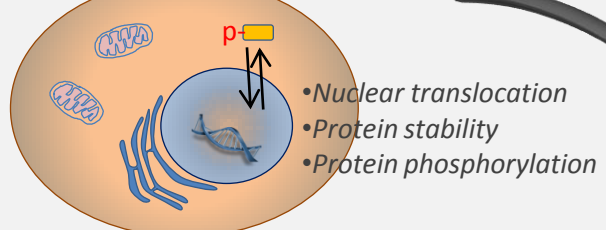
MEDINA offers robust bio-imaging assay to determine drug's effects on cell line:

HCS images

Drug behavior is analyzed in confocal microscopy images obtained in a HTS method. The effects on tumor cell lines and normal cell lines can be easily evaluated.



Normal cell

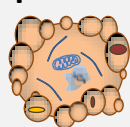


Autophagy



- Massive vacuolization
- Autophagosome
- LC3 lipidation
- Autophagic flux

Apoptosis



- Nuclear condensation
- DNA fragmentation
- Pyknosis
- Caspase activation
- Mitochondria membrane permeabilization
- Phosphatidylserine exposure

Necrosis



- Necrotic plasma membrane permeabilization
- ROS production

MEDINA provides high-quality bioimaging instruments, software, and reagents to address research applications in cell biology and drug discovery.

All of the data are produced and analyzed in a high quality control environment.



Features & Accessories of equipment:

HCS

- ✓ Two mercury arc lamps
- ✓ 16 different excitation filter sets
- ✓ 8 different emission filter sets
- ✓ Uses standard immunofluorescent probes like Texas Red, Hoechst, and the Alexa dyes
- ✓ Can collect either regular or confocal images

Confocal

- ✓ Lasers: from 405nm to 639nm
- ✓ Pinhole variable
- ✓ Dicroic secondary variable
- ✓ Spectral resolution 1nm
- ✓ Objectives: 10X 40X 63X
- ✓ Motorized platform with application for re-localization and mosaic reconstruction

Cytometer

- ✓ Laser excitation 488 nm and 640 nm
- ✓ Emission detection 4 colors, FL1 533/30 nm (eg, FITC/GFP); FL2 585/40 nm (eg, PE/PI); FL3 > 670 nm (eg, PerCP, PerCP-Cy5.5, PE-Cy™7); FL4 675/25 nm (eg, APC)
- ✓ Minimum Sample Volume 50 µL
- ✓ Data Acquisition Rate 10,000 events/second