Thermo Scientific CellInsight NXT
High Content Screening Platform

high content revolutionized

your integrated, total solution

Thermo
SCIENTIFIC

high content screening
re-invented

Continuing to drive your productivity with innovative technology

What is High Content Screening (HCS)?

High Content Screening (HCS), also known as High Content Analysis (HCA), image cytometry, quantitative cell analysis or automated cell analysis, is an automated method that is used to identify substances that alter the phenotype of a cell in a desired manner. This technology is primarily used in biological research and drug discovery and combines fluorescent microscopy, automated cell calculations and phenotyping using image processing algorithms and informatics tools for the user to make decisions about a treatment.

ASSAY FORMAT	DETECTION MODE	Intensity Based	Cell Based	Intact Cells	Multiplex Capability	Individual Cell Measurements	Subcellular Structure	Multicellular Structure	Location
High Content Screening	Multi Spectral Imaging and Screening	●	●	●	●	●	●	●	●
Flow Cytometry	Multi Laser PMT	●	●	●	●	●	◒	○	○
Geneblazer	Ratio Fluoriometric	●	●	●	○	◒	○	○	○
Luciferase	Bioluminescence	●	●	○	◒	○	○	○	○
SPA	Radiometric	●	◒	○	○	○	○	○	○
RIA	Radiometric	●	◒	○	○	○	○	○	○
ELISA	Colorimetric/Fluoriometric	●	◒	○	●	○	○	○	○
Substrate Conversion	Colorimetric/Fluoriometric Radiometric	●	◒	○	○	○	○	○	○

● Good Capability ◒ Limited Capability ○ Poor Capability

* Adapted from: Keefer, S., and Zock, J. In *Approaching High Content Screening and Analysis: Practical Advice for Users*; Haney, S.A., Eds.: High Content Screening: Science Techniques and Applications. Wiley-Interscience, 2008, pp. 3-24

How Does HCS Compare to Other Cell-Based Assays?

Using a combination of established technologies, HCS can address both cellular level intensity and morphological measurements. With sufficient resolution for subcellular detection, automated detection and phenotyping can be achieved with intact, fixed or live cells. The table above describes some common cell-based assays used in laboratories.

Understand More About The Cell

Thermo Scientific™ High Content products provide the ability to increase your knowledge about the cell through instrumentation and software tools created from the originators and leaders in automated, quantitative cellular imaging.

More Knowledge About Cellular Information

- More measurements and data about cells and their response
- More information than other cell-based assays

More Knowledge About Cells in Their Context

- More information in the context of a living cell
- More tools to characterize complex biologies

Scientific Validity Through Literature

- More peer-reviewed publications in the most relevant and respected journals
- Automated solutions to increase throughput

More Knowledge About How to Execute HCS

- More technical resources focused on high content
- More experience in using, developing and executing on HCS

More Knowledge Evolved into Products

- More out-of-the-box reagents validated for HCS
- More flexibility in instrumentation to address new assay needs

unmatched performance
from your high content screening

Reliably scale your throughput with the CellInsight NXT HCS Platform

See More in Less Images

The cutting-edge X1 camera is the most powerful HCS imaging tool to boost quantitative performance. See more of your biology in less images with the enlarged 2200 x 2200 pixel array. By ensuring reliability and reproducibility, the X1 camera's CCD technology affords you the confidence to trust your data.

Brightfield Capabilities

Designed to work with or without fluorescent labeling, the Thermo Scientific™ CellInsight™ NXT High Content Screening (HCS) Platform provides transmitted light, allowing users to explore more cell biology without the restriction of fluorescent dyes.

LED Solid-State Light Engine

The CellInsight NXT HCS Platform's LED light engine reduces intensity fluctuations and optical component wear, eliminates moving parts, and reduces both integration and channel switching times.

Analysis Software Beyond Compare

Recognized as the best high content analytical software, Thermo Scientific™ HCS Studio™ software delivers the highest level of functionality and usability, whether your data is from a few detailed research experiments, a full-scale screening campaign or a systems biology study. Novice users are able to start their analyses immediately with our out-of-the-box Thermo Scientific™ BioApplications, and more experienced users may customize and optimize as needed.

Application Area	Example Assays
Morphology	Subcellular to multicellular changes, cytoskeletal changes, cell differentiation, neurite outgrowth
Signaling	Transcription factor activation, receptor-trafficking, phosphorylation, cell-cell interactions
Expression	GFP tracking, differentiation biomarkers
Cytotoxicity	Apoptosis vs. necrosis, genotoxicity, oxidative stress, organelle status
Proliferation	Cell count, cell viability, cell cycle

re-analyzing
cell analysis

Software and informatics tools: generating, analyzing and accessing data with ease

HCS Studio

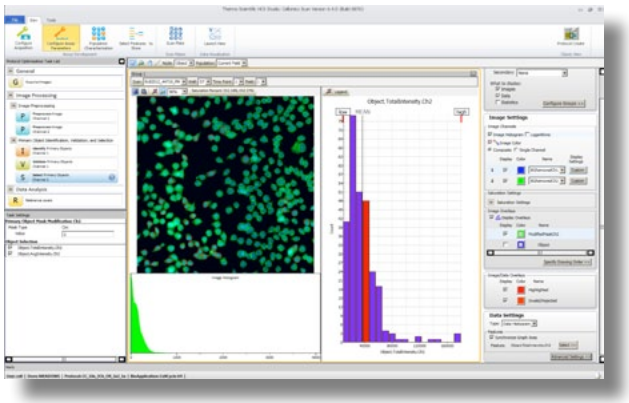
HCS Studio is the engine behind Thermo Scientific™ High Content products. Modeled after common scientific and business applications, HCS Studio packages our industry favorite software into a simple, easily navigated user interface. All your analysis, data visualization and data management tools are now available at the touch of a button.

Step 1 – Select assay from simple icon-driven interface or create your own from existing template.

BioApplications for Driving Knowledge

Users interact with BioApplications, the basis of the HCS Studio software's image analysis, via the Assay Optimization step in the assay development workflow.

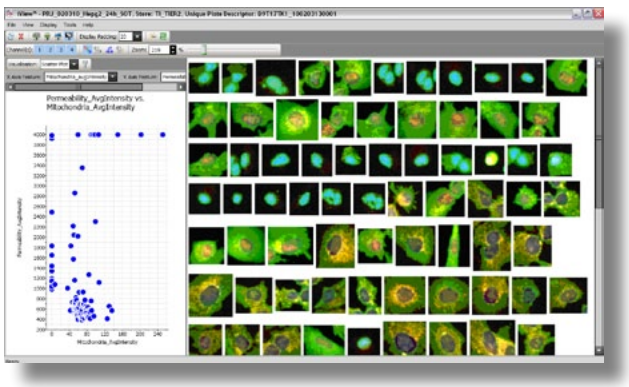
- Each BioApplication reports on numerous features for each in real time on the instrument (intelligent acquisition), generating robust statistical and biologically relevant results.
- Ranging from flexible general purpose to target-specific algorithms, BioApplications can be utilized in both assay development and screening.
- Scalable to many thousands of images without the need for high performance computing.



Step 2 – Optimize your assay using user favorite tools and world-class imaging algorithms call BioApplications.

Integrated Data Management for Quick Access

- **Store** – Thermo Scientific™ Store is a SQL Server or Oracle™ Database used for storing and managing the data automatically. Allowing for rapid, highly scalable, global access to all HCS data.
- **Automatic Transfer of Images and Data** – Centralized data storage allows data and image access from multiple locations.
- **Accessible and Linked** – Data is seamlessly linked to its associated image and protocol.

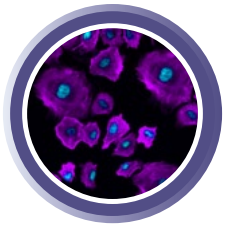


Step 3 – Scan and review your plates with interactive image and data visualization tools to make quick and informative decisions about your cells and compounds.

High Content Workflow

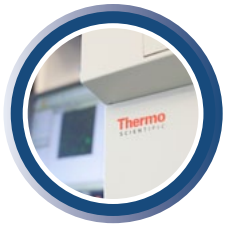
From materials for sample preparation to software for analysis and decision-making, Thermo Scientific products provide you with the materials essential to succeed in your research.

CELL/SAMPLE PREPARATION



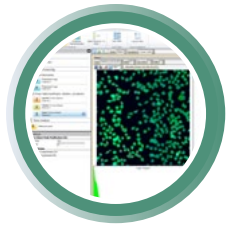
- Thermo Scientific™ Nunc™ Edge Plate
- Thermo Scientific™ DyLight™ Dyes
- Whole Cell Stains
- Thermo Scientific™ Pierce™ Antibodies validated for immunofluorescence
- Thermo Scientific™ Redistribution GFP Cell Lines
- iuvo™ Migration/Chemotaxis Plates

IMAGE AND DATA COLLECTION



- Thermo Scientific™ ArrayScan™ XTI HCA Reader
- Thermo Scientific™ CellInsight™ NXT HCS Platform
- Thermo Scientific™ HCS Studio™ using BioApplications for Image Analysis

VISUALIZATION AND DECISION TOOLS



- HCS Studio (View/iView)
- Thermo Scientific™ HCS Connect
- Store Informatics and Database Platform

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