Thermo Scientific ArrayScan XTI
High Content Analysis Reader

revolutionizing cell biology

with the power of high content

Thermo
SCIENTIFIC

learn more about your cells
using high content technology

Thermo Scientific High Content products provide the ability to increase your knowledge about the cell

What is High Content Analysis (HCA)?

High Content Analysis (HCA), also known as High Content Screening (HCS), 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.

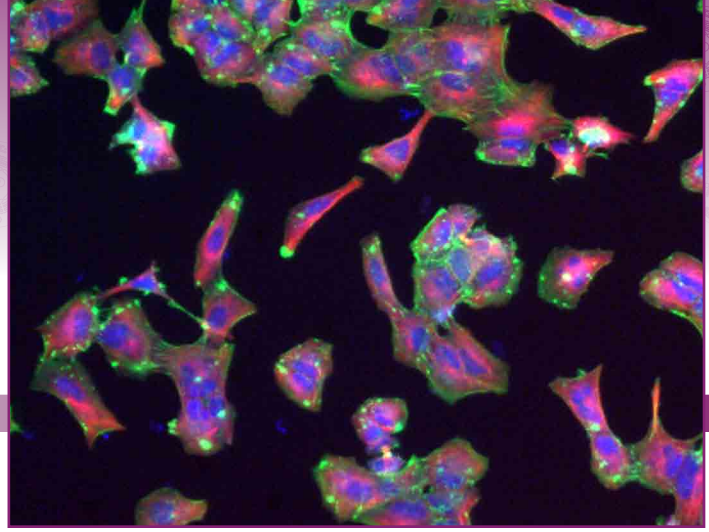
ASSAY FORMAT	DETECTION MODE	Intensity Based	Cell Based	Intact Cells	Multiplex Capability	Individual Cell Measurements	Subcellular Structure	Multicellular Structure	Location
High Content Analysis	Multi-spectral Imaging and Analysis	●	●	●	●	●	●	●	●
Flow Cytometry	Multi Laser PMT	●	●	●	●	●	◒	○	○
Geneblazer	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 HCA Compare to Other Cell-Based Assays?

Using a combination of established technologies, HCA 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 HCA

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

More Knowledge Evolved into Products

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

latest innovations
imaging assays for now and the future

Thermo Scientific products provide modularity for added flexibility

The Thermo Scientific™ ArrayScan™ XTI High Content Analysis (HCA) Reader is able to grow with you and your research needs. Whether your interest is in basic cell assays or investigating complex biologies, Thermo Scientific High Content Products are able to provide a right-sized solution for you.

Key Technological Advancements

- **See More in Less Images** – The cutting-edge X1 camera is the most powerful HCA imaging tool to boost quantitative performance. See more of your biology in less images with the enlarged 2208 x 2208 pixel array. By ensuring reliability and reproducibility, the X1 camera's CCD technology affords you the confidence to trust your data.

- **Modularity** – With several modules that can be added after the initial purchase, you can increase your assay breadth leveraging your initial capital investment.

- **LED Solid-State Light Engine** – The ArrayScan XTI HCA Reader's seven-color LED light engine reduces intensity fluctuations and optical component wear, eliminates moving parts and reduces both integration and channel switching times.

- **Superior Optics** – AxioObserver Automated Microscope from Carl Zeiss™ Microscopy, one of the leaders in optical technology, ensures optimal performance in image acquisition when used with the large selection of available objectives.

Modules and Configurations that Increase Flexibility

The ArrayScan XTI HCA Reader is designed to address assay needs of today with the ability to adapt to the needs of tomorrow. With multiple modules that extend functionality and different configurations that permit out-of-the-box tools, the ArrayScan XTI HCA Reader allows you to invest in technology today, confident it can address different assays in the future.

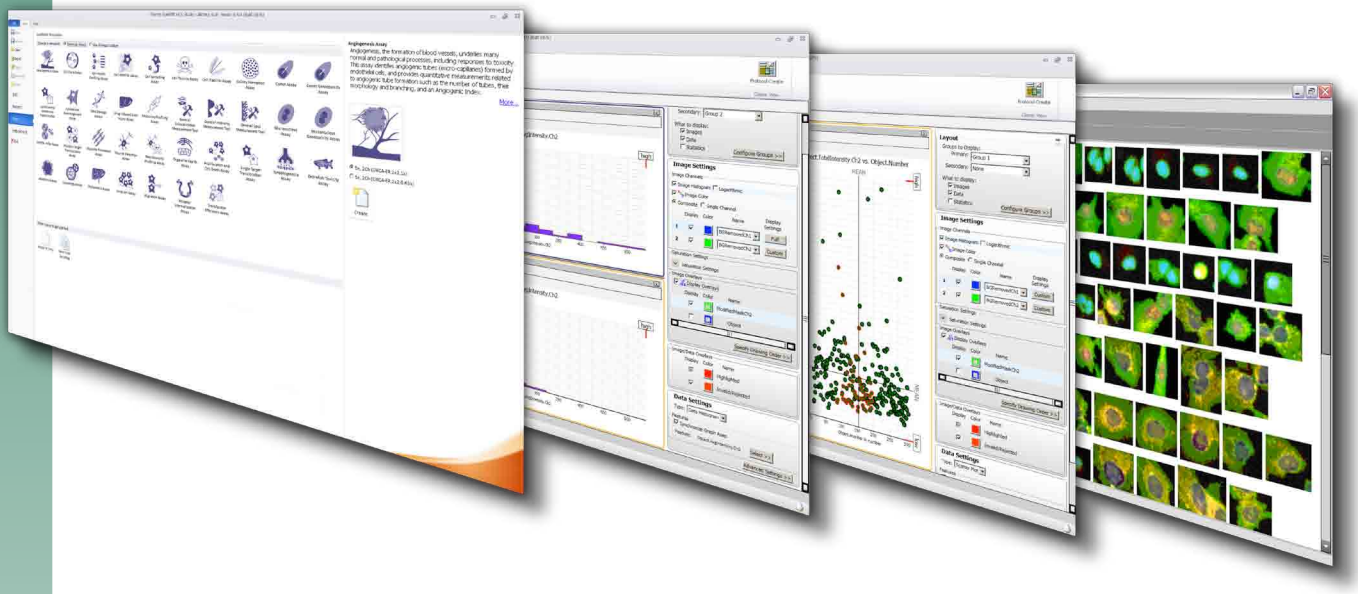
Modules	Feature
Orbitor RS	Designed for use in the lab, the Thermo Scientific™ Orbitor™ RS Microplate Mover increases and expands the throughput capacity of The ArrayScan XTI HCA Reader
Live Cell Module	The Thermo Scientific™ Live Cell Module offers full environmental control to maintain cell health and viability, ensuring more reliable results
Brightfield Module	Thermo Scientific™ Brightfield Module allows you to perform multi-mode, label-free HCA
Confocal Module	Confocal module with the latest in high-speed Nipkow Spinning Disk technology
Liquid Handler	Thermo Scientific™ Liquid Handling Module adds flexible pipetting capability

Product Configurations

* Catalog Number and Product Name	**Hardware –** Fully automated reader with integrated barcode reader, light source, objectives, microscope, camera, Instrument PC	**Software –** HCS Studio Cell Analysis Software and Store Express Image and Database Management Software	Also Included
NX100001LB ArrayScan XTI HCA Reader	◉	◉	
NX10002INF ArrayScan XTI Infinity Configuration	◉	◉ + Store SE Image and Database Management Software, full HCS Studio Cell Analysis Software Client License	Live Cell Module with Definite Focus; Confocal Module; Brightfield Module; 20x (0.8NA) Plan-Apochromat; 40x (0.75NA) Plan-Neofluar
CXX03111LDF ArrayScan XTI HCA Reader with Definite Focus, Live Cell Chamber Module and LED	◉	◉ + Store SE Image and Database Management Software, full HCS Studio Cell Analysis Software Client License	Live Cell Module with Definite Focus
NX10002L ArrayScan XTI HCA Reader	◉	◉ + Store SE Image and Database Management Software	

software and informatics
generate, analyze and access data

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



Thermo Scientific High Content Products use highly developed, user-focused, analysis, data visualization and data management software. Designed to function as a system, the software tools are used on Thermo Scientific™ instrumentation, or as a client-based, off-instrument tool to promote remote analysis and visualization.

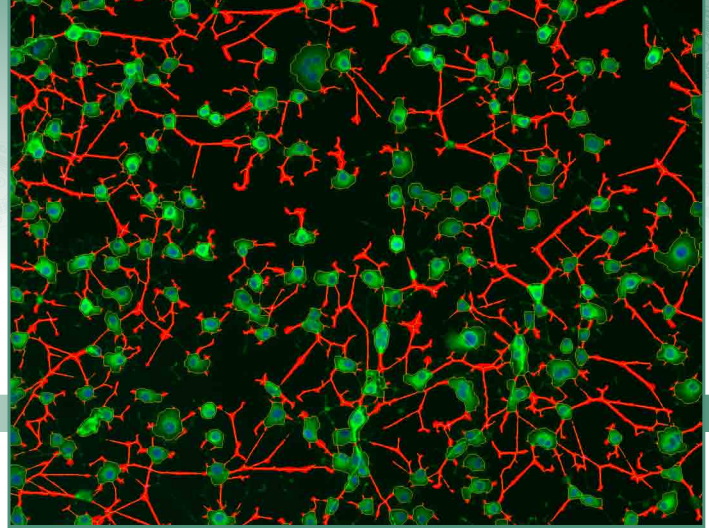
HCS Studio Cell Analysis Software

Thermo Scientific™ HCS Studio™ Cell Analysis Software is the engine behind Thermo Scientific High Content Products. Modeled after common scientific and business applications, HCS Studio Cell Analysis Software packages our industry favorite software into a simple user interface. The popular Thermo Scientific™ HCS Studio™ Scan Application and Thermo Scientific™ HCS Studio™ View Applications are located in a central launchpad—Thermo Scientific™ HCS Studio™ HCS Navigator Application—easily located and docked on your desktop. Featuring 30+ one-click assays, HCS Studio Cell Analysis Software ideally provides smart defaults to get you closer to the answers you need quickly.

Intuitive Workflow

Scan your plates with assay parameters interactively optimized by you through the HCS Studio Cell Analysis intuitive workflow software.

- Assay configuration with easy, familiar tools with real time feedback to data and image on multiple biological extents.
- Assay optimization with no scripting or journaling, while leveraging the powerful libraries of each of the Thermo Scientific™ BioApplications.
- Intelligent acquisition allows you to walk away and let the system determine the number of cells necessary for statistically relevant assay performance.



BioApplications for Driving Knowledge

Users interact with BioApplications, the basis of the HCS Studio Cell Analysis Software 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 thousands of images without the need for distributed computing.

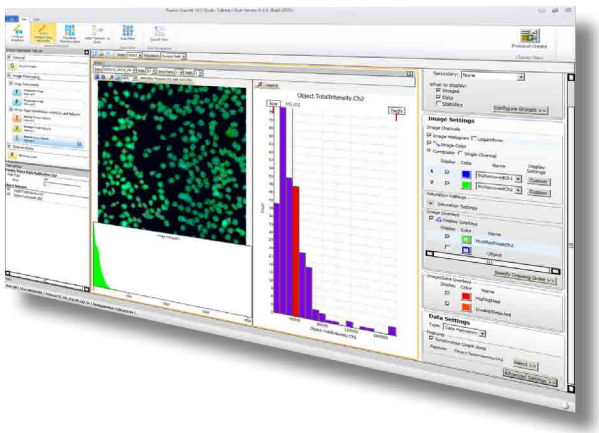
Image Linked to Data

The HCS Studio Cell Analysis Software provides a novel interface that allows for easy user interaction with data and images.

- View the data from the image to see the cell, well, field or plate information.
- Quick assay quality control is achieved to ensure proper labeling and plating.
- With kinetic image sets, data for each time point can be displayed to demonstrate cellular response over a time period, while powerful movies can be created to show or export.

Integrated Data Management for Quick Access

- **Store Express Image and Database Management Software** – 10GB SQL Lite database to allow for out-of-the-box cell-level details and easily queried images and data
- **Store Image and Database Management Software** – Thermo Scientific™ Store™ Image and Database Management Software is a SQL Server or Oracle™ database used for storing and managing the data automatically. Allowing for rapid, highly scalable, global access to all HCA 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.



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