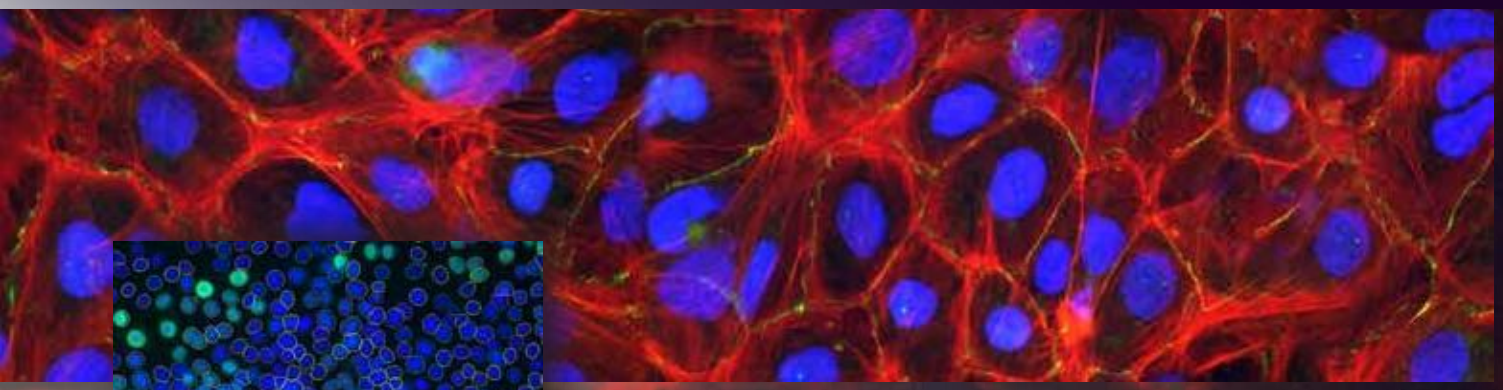
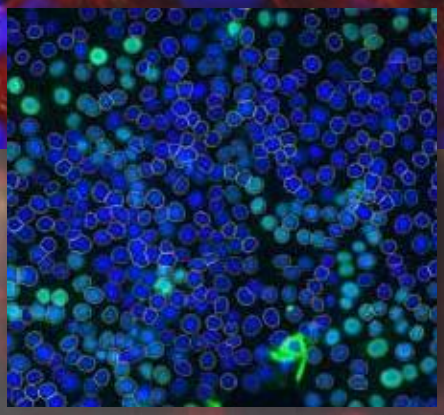
wiscan®

Hermes

Throughput, Sophistication, Robustness





Breakthrough Automated Research Imaging Workstation

The ultimate cost-effective solution for high-content and high-throughput screening

IDEA Bio-Medical Ltd.

Seeing Better

wiscan®
Hermes Throughput, Sophistication, Robustness

IDEA Bio-Medical presents a revolutionary technological platform for the drug discovery industry.

Hermes and other company products, driven by this technological platform, improve the output of drug discovery processes and bring down the exorbitant costs of biomedical and pharmaceutical R&D.

Major elements of the leading technology are WiScan® and WiSoft®:

WiScan®: IDEA Bio-Medical's High Definition Cell Imaging technology for High Content Screening processes (HCS), which provides the unique combination of the two contradicting primary features of automated microscopy: Image Quality, and Acquisition Speed.

WiSoft® : IDEA Bio-Medical's effective, proprietary analysis software, which provides a significant, sophisticated image processing algorithmic library, operated by a unique and simple software interface.

IDEA Bio-Medical was founded in 2007 through a partnership between YEDA (the Weizmann Institute's commercialization arm) and IDEA Machine Development, Design and Production Ltd. (an innovation hub).

Hermes is a cost-effective High Content / High Throughput Screening system that operates at extremely **high speeds** of image acquisition and generates very **high quality** images.

Hermes is **intuitively operated**. Its built-in applications are extremely **easy to use**, and are operated at the push-of-a-button.

The Hermes system is ideal for a large **variety of applications**, including Phenotypic Screening, Spheroids and 3D models, Rare-Event detection, Cytometry, Cell Count (cytotoxicity, proliferation), Protein Expression, Cell Morphology, Cell Cycle, Protein Translocation, Intracellular Vesicles Quantification, Golgi Intracellular Distribution, Mitochondria Characterization, Cytoskeleton Structure, Nuclear and Sub-Nuclear Structures Characterization, Bacteriology and Immunology.

Hermes is a **sophisticated and flexible** system, offering fluorescence colors, bright field option, Laser based photo bleaching and a large range of air objectives and oil objectives.
The system can accommodate a variety of plates and sample formats.

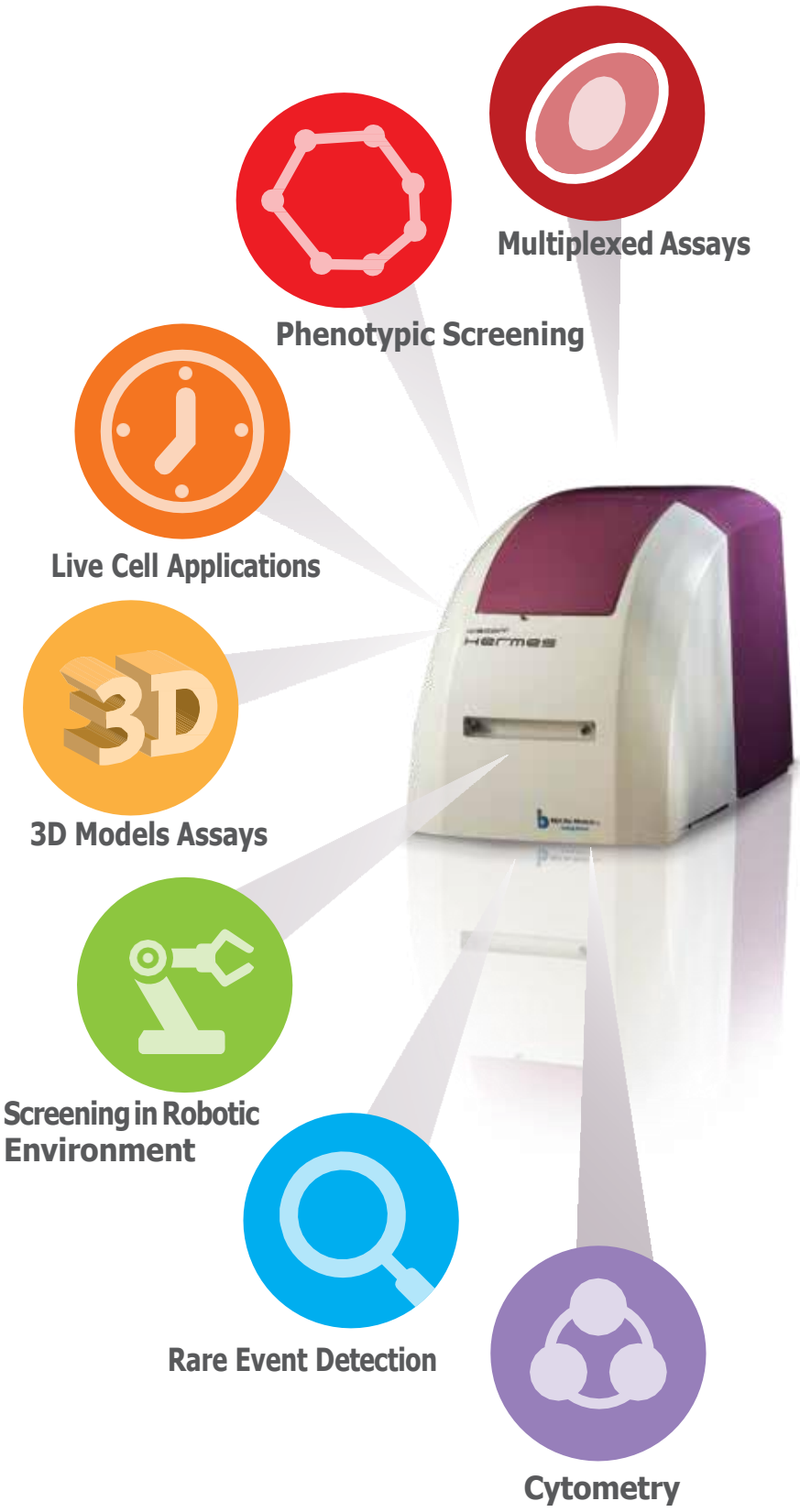
Hermes is now offered with the unique capabilities of FRET and FRAP imaging processes.

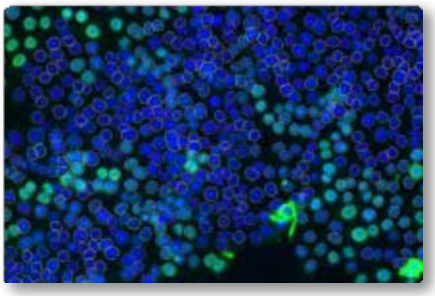
Hermes is a high-end, **attractively priced modular platform**, offering modular optional packages, which enable full customization for different user requirements.

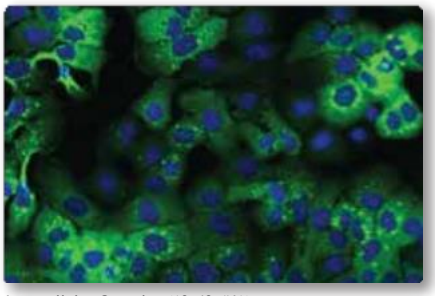
Hermes' mechanisms are based on patents, creatively designed to meet heavy duty operation demands (24/7) with full process **robustness**.

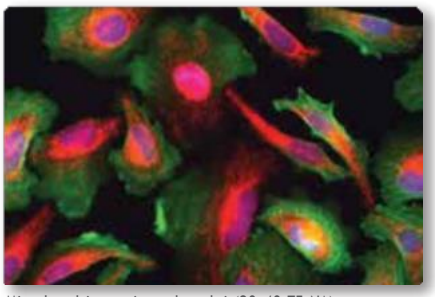
Hermes is a product of IDEA Bio-Medical, whose professional team is known for its creativity and for its responsiveness to customer for **support and service**.

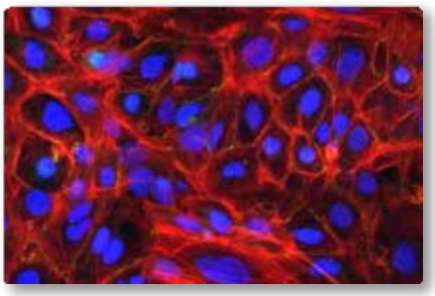
Industry Trends are Challenged

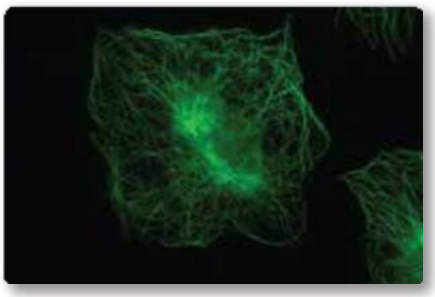



Cell Count (4x/0.16NA)


Intracellular Granules (10x/0.4NA)


Mitochondria, actin and nuclei (20x/0.75 NA)


Actin fibers and cell-cell junctions (40x/0.75NA)

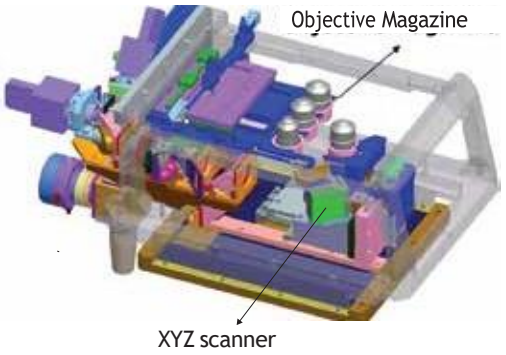

Microtubules (60x/0.9NA)

wiscan®
Hermes Technology Advantages

Patented XYZ Scanner

Patented XYZ scanner with 100nm resolution

- Consists of an optical path for illumination and image acquisition
- Holds 1 objective at a time - the objective is the moving part while the plate remains stationary
- Equipped with linear motors and linear encoders for closed loop operation



Patented Objective Exchanger

- Special patented objective holder enables quick connect manually or automatically of Olympus objectives with no adjustment needed.
- Objective magazine holds 3 objectives
- Automatic loading of objectives to the scanner
- Offering 20 nm repeatability in positioning of the loaded objective

Mag.	NA	Pixel Size (um)	Working Distance (um)
2x	0.08	3	6200
4x	0.16	1.5	13000
10x	0.4	0.6	3100
20x	0.75	0.3	600
20x	0.45	0.3	6600-7800
40x	0.75	0.15	510
40x	0.9	0.15	200
60x	0.9	0.1	200
20x oil	0.85	0.3	170
60x oil	1.42	0.1	150

Objectives from different companies can be offered according to user's request.

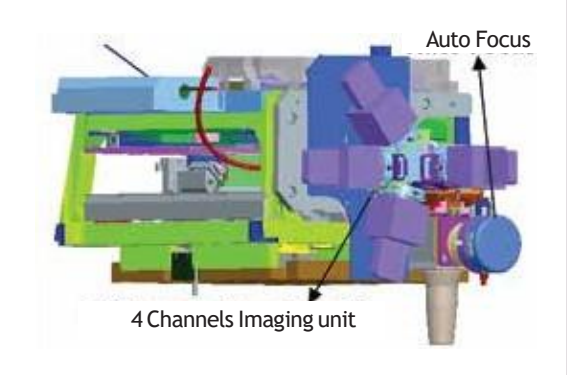
Provide the unique combination of Accuracy& Efficiency

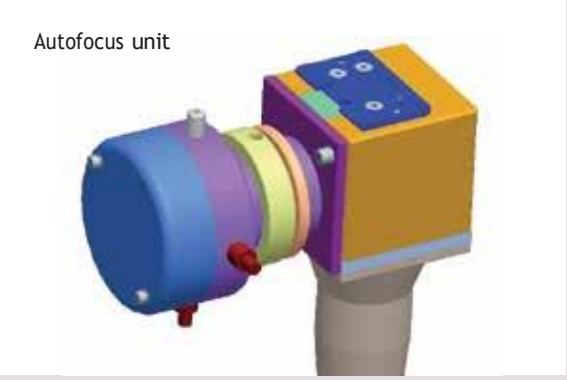
Multi Channel Imaging Module

- The imaging module consists of 1-4 imaging channels
- LED based fluorescence imaging with 2-7 optional wavelengths
- Brightfield using white LED illumination
- Laser based photo bleaching
- Image resolution ranges from 0.1 to 3 µm / pixel 60X-2X objective magnifications

Patented Autofocus

- Patented laser autofocus method with100nm sample plane detection. Insures highly sharp images for full image segmentation reliability.
- Several algorithms are implemented for optimal performance in various magnifications.
- High throughput mapping for scanning U-shaped bottom plates used for spheroids and organoids imaging





Provide the unique combination of Accuracy& Efficiency

Illumination Sources

- The Hermes is offered with up to 7 fluorescence colors, transmitted white LED light and laser diode used for photo bleaching in FRAP imaging process. Each of the fluorescence colors combination is offered with high/regular screening throughput configuration.
- Simultaneous acquisition mode for capturing rapid simultaneous events at maximum acquisition speed, is offered for specific color combinations.

Fluorescence channel	Ex.	Em.	7 color	HT 4 channels	HT 3 channels
DAPI	390/18	440/40	•	•	
CFP	438/24	482/35	•	•	•
FITC	475/28	525/30	•	•	
YFP	513/17	542/27	•	•	•
TRITC	549/15	607/36	•	•	
mCherry	575/25	624/40	•	•	•
CY5	648/20	694/44	•	•	
Transmission White LED			•	•	•
Laser Diode , 635nm, 5mW			•	•	•

• Colors included in standard 4 channel configuration • selectable

Simultaneous acquisition combinations	Excitation (nm)	Emission (nm)
DAPI/HOECHST	390/22	440/40
TRITC/Cy3	560/32	607/36
DAPI/HOECHST	390/22	440/40
CY5	648/20	694/44
GFP/FITC	485/25	525/30
CY5	648/20	694/44
CFP	485/25	525/30
mCherry	575/35	624/40

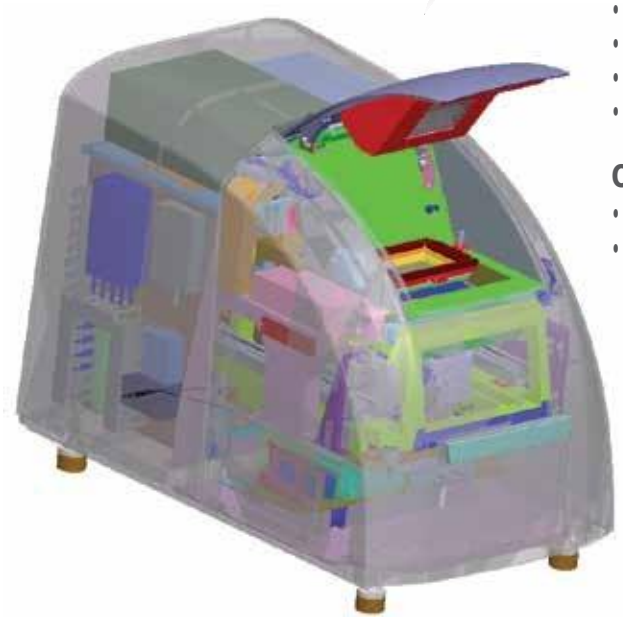
Sample format

Maximum flexibility in plate formats. Any format with SBS standard may be used. Adaptors for slides, spotted array, dishes and chambers are available.

sample format	1536 wells	384 wells	96 wells	48 wells	24 wells	8 wells	Dish	Slide

High versatility for more experimental options

Hermes Configuration Options



Objectives (air):
- 2X/0.08
- 4X/0.16
- 10X/0.4
- 20X/0.45
- 20X/0.75
- 40X/0.75
- 40X/0.9
- 60X/0.9

Objectives (oil):
- 20X/0.85
- 60X/1.42

Basic Imaging Module
- Filter wheel: 2-7 colors

Illumination sources
- DAPI (390/18; 440/40)
- CFP (438/24; 482/35)
- FITC (475/27; 525/30)
- YFP (513/17; 542/27)
- TRITC (549/15; 607/36)
- mCherry (575/25; 624/40)
- CY5 (648/20; 694/44)
- Transmission white LED
- Laser diode 635nm

Optional modular Packages:
- High Throughput multi-channel imaging module: 3/4 colors select or 4-7/7 colors select
- Live cell environmental control
- Automation
- Object mapping for rare event detection
- WiSoft Minerva full analysis software

Sample holder
- Microplates (8-1536 wells)
- Slide holder
- Dish holder
- Chamber holder

High versatility for more experimental options

wiscan®
Hermes Workflow

1. Application selection

2. Scan Setup

3. Imaging Parameters Calibration

4. Run Application

5. View Results

Ease of Use

- Simple and Intuitive user interface
- Fast and easy scanning setup
- Tablet-style touchscreen operation
- Joystick for sample navigation
- Extremely fast training

Simple user interface, quick user training

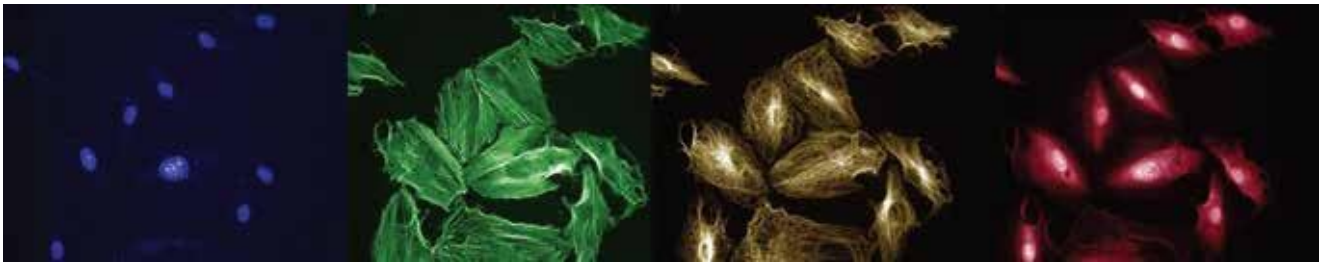
wiscan®
Hermes Optional Packages

Multi Channel Imaging - High Throughput


4 Channels Imaging module

- Guarantees maximum throughput
- Consists of monolithic passive unit with 2 to 4 selectable separate imaging channels
- Acquire images simultaneously (with no time gap or with a gap of exposure time only)
- High throughput acquisition rate is achieved in all range of magnification (2X-60X) by combination of the patented scanner, autofocus, multi-channel module for simultaneous imaging and software optimization.

Plate Format	Colors	Fields per well	Exposure Time (msec)	Run Time (min: sec)
96	4	1	50	01:39
384	4	1	50	05:25
1536	4	1	50	19:40

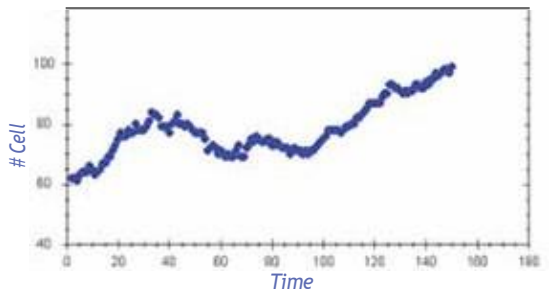


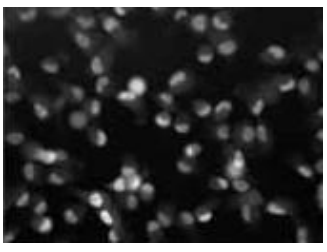
Multiplexing 4 cell features to evaluate cell status

Live Cell

Environmental stabilized conditions for live cells

- Temperature control range - from ambient+5°C to 40°C ±0.5°C CO2 controller as an external accessory.
- Allow long time lapse experiments with very high positioning repeatability (200nm).
- Microplate does not move along the scanning process.





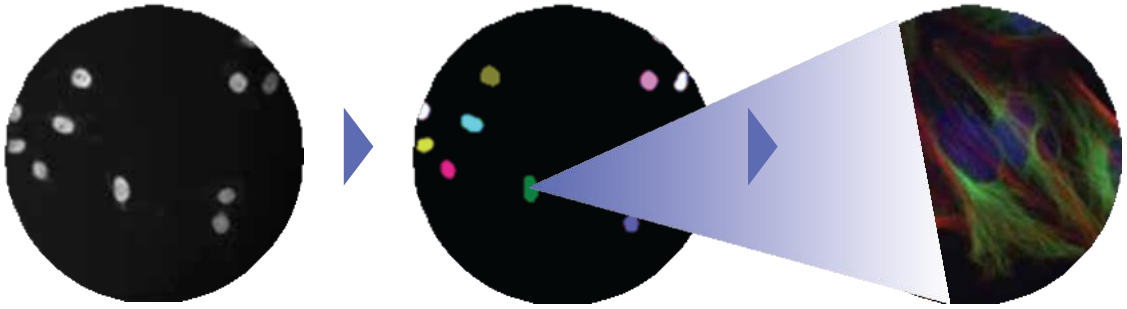
Proliferation assay - Analysis of cell number during treatment in live-fluorescently labeled H1299 cells (20x Magnification)

Experiments efficiency & robustness 24/7

Object Mapping

Enhances throughput of high magnification screens by enabling recognition of islands of interest in low magnifications and imaging of those islands in higher magnification.

- Patented automatic objective exchanger with 20nm repeatability
- Run 2X-10X magnifications scan followed by 20X-60X High magnifications scan



Acquire image using low magnification

Automatic recognition of objects of interest according to user definitions

Objects of interest are imaged using high magnification

Automation

Interfaces Hermes to Plate Stackers and Robotic Plate Handlers

- Combination of SW and mechanical interface
- Remote accessibility
- External loader compatibility
- Automatic focus plane recognition
- Applied with numerous lab robots

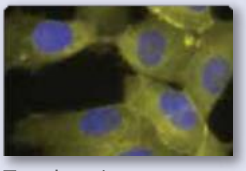
Efficient high resolution imaging with 24/7 Experiments

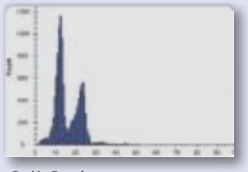
wiscan®
Hermes Optional packages

WiSoft Athena- Application Software

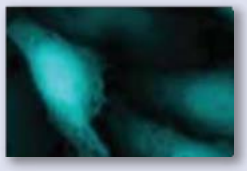
- A software tool for application-derived analysis and visualization of image based experiments
- Incorporates embedded analysis algorithms, statistical evaluation tools and sub-population analysis
- The UI and UX are optimized for analyzing image-based cell biology experiments

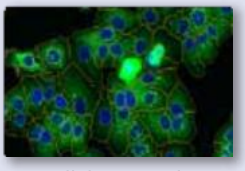

Cell Count

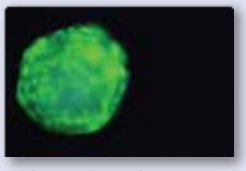

Translocation

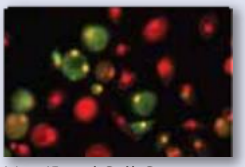

Cell Cycle

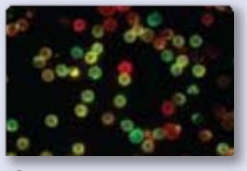

Cell Morphology


Protein Expression

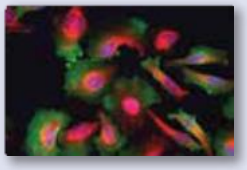

Intracellular Granules

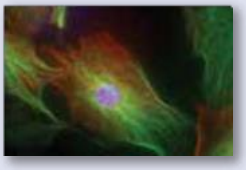

Spheroids and 3D objects


Live/Dead Cell Count


Cytometry


Cell Count in Colonies


Multiplexing


Cytoskeleton Fiber Analysis

WiSoft Minerva- Developers Software

- Environment for the development of analysis scripts
- Rich library of image analysis modules with unique algorithms optimized for fast analysis
- Sub-population analysis tools
- Variety of statistical evaluation modules
- Visualization tools
- Developer tools for incorporation of new analysis modules and for script debugging


User defined applications


Modular developer environment


Interactive parameters tuner


User's algorithms incorporation


Visualization tools


Cytometry


Temporal data evaluation

3D analysis tools


Multi-parametric statistics


Outlier exclusion tool

Wide analysis options for the life sciences researcher

WiScan Hermes system specifications

Features	Content/Description
3D reader	EPI-fluorescent inverted optics mounted on XYZ (patented) linear scanner
Auto Focus	Patented ultra-fast laser based Auto Focus with 100nm resolution
XY motion	Accurate positioning with 200nm repeatability
Z motion	Accurate positioning with 100nm repeatability
Illumination sources	Fluorescence channels up to 7 optional LED sources. (DAPI, CFP, GFP, YFP, RFP, mCherry, CY5) Transmission: White LED source, laser diode 635nm
Optical Filters	Up to 7 emission filters and compatible dichroic filters. (automatically exchanged)
Objectives (Air)	Choice of air objectives ranging from 2X to 60X (see objectives table for details)
Objectives (Oil)	Optional 20X , 60X oil immersion objectives with automated oil feeding in closed loop
Camera	High sensitivity CCD camera 1.3MPixel
Image resolution	0.1-3 um/pixel in 60X-2X objective magnification
Sample format	Supports full-area screening of 24-1536 well plates. Supports slides, microarrays and 35 mm dish formats. Supports U-shape bottom plates.
Computer	PC with Windows® operating system and touch screen.
Enclosure	Allows operation in fully lit areas
System Dimensions	Desktop standalone platform: 47 W x 72 D x 57 H (cm), 18.5 W x 28.5 D x 22.4 H (inches) With plate cover closed
Certification	CE, UL, FCC

Acquisition Software specifications

Features	Content/Description
Operation modes	Totally unattended screening Manual interactive microscope mode
Visualization	Interactive image and graphical data display
User Interface	User-friendly interface providing application-specific settings, full compatibility with the Athena software
Experiment Documentation	Full documentation of experimental parameters with the raw data
Image File Format	XML TIFF OME
Connectivity	Data transfer and remote monitoring via a network connection

User's Scientific Publications

GRP78 / BiP / HSPA5 / Dna K is a universal therapeutic target for human disease
Booth L., Roberts J.L., Cash D.R., Tavallai S., Jean S., Fidanza A., Cruz-Luna T., Siembiba P., Cycon K.A., Cornelissen C.N., Dent P.; Journal of Cellular Physiology, 2015, 230(7): 1661-76

Variomics screen identifies the reentrant loop of the calciumactivated chloride channel ANO1 that facilitates channel activation
Bill A., Oana Popa M., van Diepen M.T., Gutierrez A., Lilley S., Velkova M., Acheson K., Choudhury H., Renaud N.A., Auld D.S., Gosling M., Groot-Kormelink P.J., Alex Gaither L.G.; Journal of Biological Chemistry, 2015, 290: 889-903

3,5-Diamino-1,3,4-triazoles as a novel scaffold for potent, reversible LSD1 (KDM1A) inhibitors.
Kutz CJ., Holshouser SL., Marrow EA., Woster PM.; Medicinal Chemistry Communications, 2014, 5, 1863-1870

The Cofilin Phosphatase Slingshot Homolog 1 (SSH1) Links NOD1 Signaling to Actin Remodeling.
Bielig H., Lautz K., Braun P.R., Menning M., Machuy N., Brugmann C., Barisic S., Eisler S., Andree M., Zurek B., Kashkar H., Sansonetti PJ, Hausser A., Meyer TF, Kufer TA; PLOS Pathogens, 2014, 10, 9.

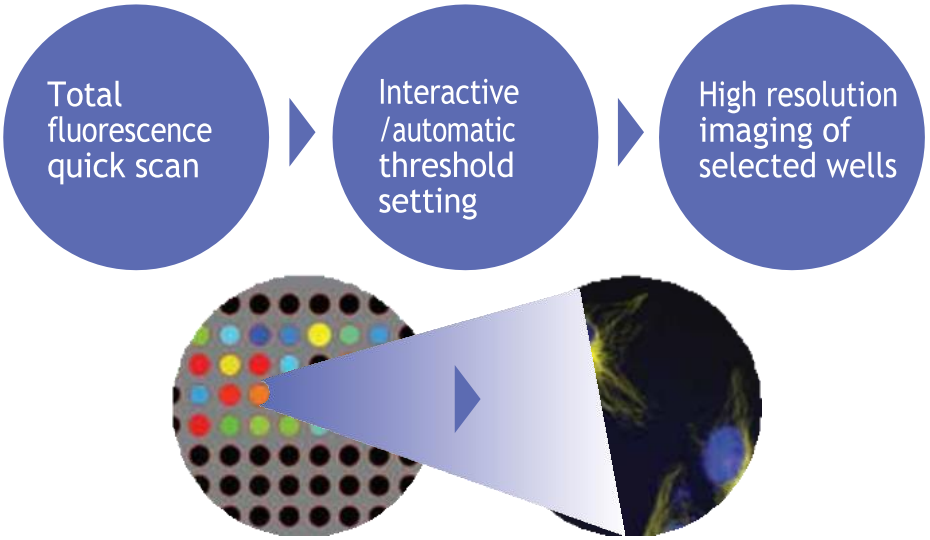
Regulation of OSU-03012 Toxicity by ER Stress Proteins and ER Stress-Inducing Drugs.
Booth L., Roberts J.L., Cruickshanks N., Grant S., Poklepovic A., Dent P.; Mol. Cancer. Ther, 2014, 1-15, AACR

HIV-1 evades innate immune recognition through specific cofactor recruitment.
Rasaiyaah J., Tan C.P., Fletcher A.J, Price A.J., Blondeau C., Hilditch L., Jacques D.A., Selwood D.L., James L.C., Noursadeghi M., Towers G.J. ; Nature, 2013 Nov 21;503(7476):402-5

wiscan®
Hermes Advanced Imaging Tools

Multiscale Imaging

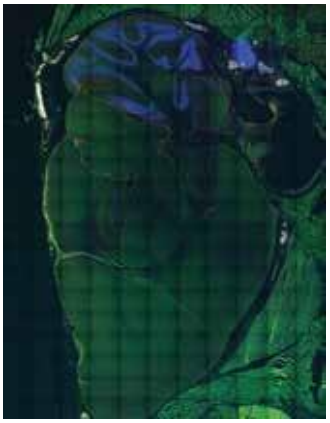
- Multimode scan: quick total fluorescence scan followed by interactive definition of selected wells with high resolution objective.
- Speed of initial scan 1-5 min (96-1536 well plates)
- From total well signal to selected wells detailed imaging



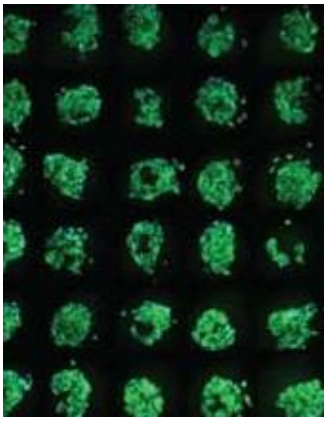
Slide Imaging

- Single ROI or spotted array format
- Interactive scan region selection.
- Special slide holder. Option for custom design.

Adaptor	Cat#
Slide	10064807
Chamber	10064818
Dish	10064866



Mouse brain. Montage using 10X magnification

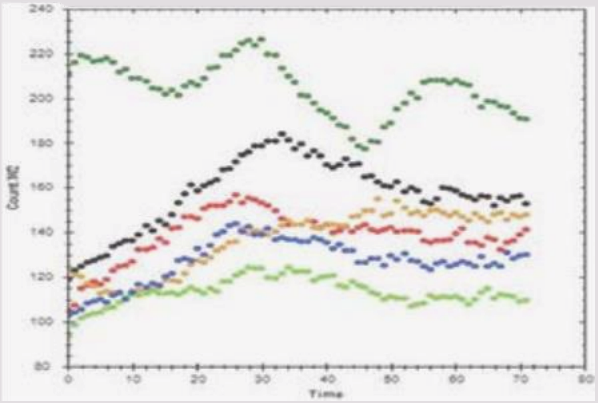


Biochip with labeled cells plated on adhesion spots

Flexibility to comply with every biological experiment

Time Lapse

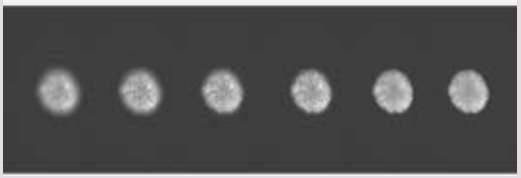
- Multi -time point scanning
- Option to select a point list for re-visiting
- Maximum rate of acquisition in a single spot 14 Hz
- Flexible definition of cycles and intervals



Count and Fluorescence as a Function of Time

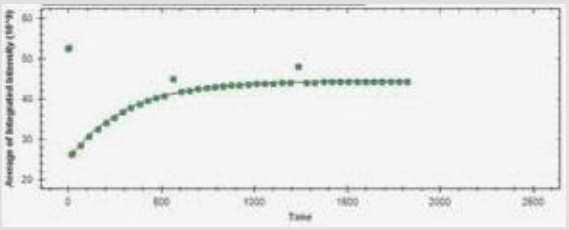
Z stack

- Multi Z plane scanning
- Interactive definition of the distance between planes and the number of planes
- Interactive definition of upper and lower scan plane
- Option for combination with time lapse, rare event and all biological applications



Fluorescence Recovery After Photobleaching (FRAP)

- Adaptation of FRAP for high content screening
- Bleaching is conducted by diode laser beam
- Diffusion information and fraction of diffusing component calculated from the data using dedicated Athena application
- Optional HTS mode where only 3 time points are acquired: pre-bleaching, post bleaching and after recovery
- Sequential or per field acquisition



Fluorescence Resonance Energy Transfer (FRET)

- High resolution high throughput FRET imaging.
- FRET signal indicates close proximity between the fluorophores.
- Measures the emission of an acceptor molecule after energy transfer from a donor fluorophore
- Excitation using LED
- Flexible donor and acceptor definition

Capturing multidimensional biology

wiscan®
Hermes
Throughput, Sophistication, Robustness

The fastest system in its field, bringing high- throughput rates to the high-content world. Performs common research applications at the push-of-a-button.

IDEA Bio-Medical Ltd.
Seeing Better

www.idea-bio.com

Worldwide headquarter
IDEA Bio-Medical Ltd.
2 Prof. Bergman St.
Rehovot, 76705, Israel
Phone: +972 732732 400
Fax: +972 89469 556
info@idea-bio.com

Japan
PNEUM Co.,Ltd.
5-15-3 Minami Koshigaya,
Koshigaya-Shi, Saitama
Phone: +81 48 985 2720
contact@pneum.co.jp

USA
IDEA Bio-Medical Ltd.
5632 Van Nuys Blvd.
Suite # 411, Van Nuys, CA 91401
phone: 818-823-9763
info@idea-bio.com