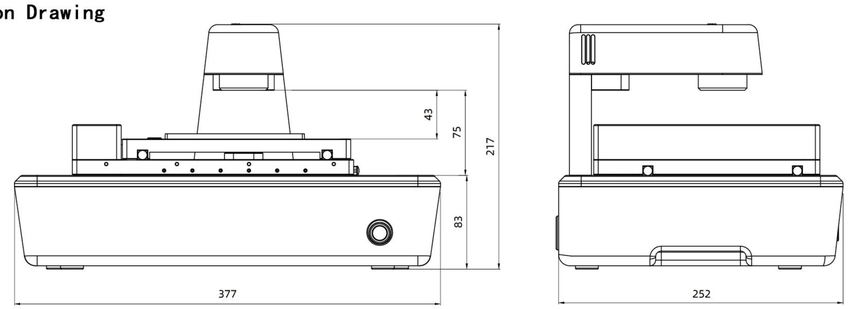
MCS31 Specifications

Brightfield Observation	Transmitted phase contrast illumination, working distance 55mm
	50,000 - hour long lifespan, 625nm low - phototoxicity LED light source
Fluorescence Observation (Fluorescence Wavelengths Customizable)	• Blue (B): 472 - 495nm
	• Green (G): 543 - 560nm
	• Ultraviolet (UV): 393 - 416nm
Objective Lenses	• Select any two from 4×/10×/20× objective lenses; Motorized objective lens switching
Stage	Motorized XY moving platform with a stroke of 115*77mm; Repeat positioning accuracy ≤ 3μm
Z - axis	Motorized auto - focus mechanism
Camera	High - speed and high - sensitivity camera, 500W 2/3 inch, 40fps
Software	Supports remote control, including light control, camera control, photo taking, video recording, time - lapse photography
Analysis Functions	Cell counting, cell confluency, scratch assay, transfection efficiency, viability analysis
Scanning Functions	• Multi - well imaging: Custom - set XY array for multi - point photography, brightfield and fluorescence multi - channel overlay
	• Region scanning: Set rectangular regions for full - scan stitching, brightfield and fluorescence multi - channel overlay
Data Transmission/Power Supply	USB data cable + DC power cable
Working Environment	5 - 40° C, 20 - 95% RH
Dimensions	252mm × 377mm × 208mm

Dimension Drawing

Unit:mm



ISO 9001:2015 CERTIFICATED ISO 14001 CERTIFICATED ISO 13485 CERTIFICATED ISO 45001 CERTIFICATED

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MCS31

Live Cell Imaging System

MCS31 Applications

01

Dynamic Monitoring of Organoids

As 3D culture models, organoids fill the gap between 2D cells and animal models and are widely used in disease simulation, drug testing, and regenerative medicine.

- **Kinetics of Organoid Formation** — Quantitatively monitor the impact of seeding density on formation efficiency. Track the aggregation process and record the tensor of area/volume changes
- **Migration Ability Assessment** — Invasive analysis of tumor organoids
- **Drug Sensitivity Testing** — Real - time recording of the morphological collapse of organoids in response to chemotherapy drugs

02

Drug Development

Live - cell imaging replaces traditional endpoint methods, enabling dynamic quantification of drug effects and accelerating preclinical research.

- **Internalization and Bystander Effect of ADC Drugs** — Dual - color fluorescence tracking of the intracellular transport of antibody - drug conjugates
- **Dynamic Toxicity Assessment of Small Molecules**
- **Killing Efficacy of Immune Cells** — Recording the lysis process of tumor spheroids by NK cells

03

Development of Stem Cell Therapy Products

The activity and differentiation stability of stem cells are the core of quality control for therapeutic agents and require non - destructive long - term monitoring.

- **Quality Control of Proliferation Activity** — Auto - confluency analysis of umbilical cord MSCs for harvest reminders
- **Differentiation Tendency Early Warning** — Tracking early morphological changes in adipogenic/osteogenic differentiation
- **Stability of Cell Therapeutic Products** — Verification of survival rate after cryopreservation and recovery

04

Monitoring of Cell Industrial Processes

Monitor cell culture conditions to evaluate culture status, experimental status, and subculture timing, and control quality.

- **Batch - to - Batch Consistency Management** — Comparison of proliferation curves of CHO cells from different batches
- **Real - time Contamination Early Warning** — AI - based morphological recognition of bacterial/fungal contamination
- **Stability of Cell Therapy Products** — Monitoring of aggregation behavior during CAR - T cell expansion

Agricultural Science

- Plant - Pathogen Interaction Research
- Fertility and Organelle Localization of Beans
- Gene Function and Protein Expression Research

Cell Industry

- Cell Culture Experiment Monitoring
- In - line Quality Control of Bioreactors
- Stability Monitoring of Cell Therapy Products

Immunology

- Macrophage Phagocytosis Tracking
- Neutrophil Activation Analysis
- Collagen - Induced Immune Monitor

Neuroscience

- Neuron Network Formation and Construction
- Research on Neural Stem Cell Differentiation
- Quantitative Analysis of Brain Organoids

Drug R&D

- Preliminary Toxicity Screening of Chemical Drugs
- Early Activity Evaluation of Compounds
- Research on Drug Action Mechanisms

Stem Cell Applications

- Pluripotency Detection of Stem Cells
- Early Warning of Directed Differentiation
- Dynamic Monitoring of Organoid Morphology

Regenerative Medicine

- Skin Wound Healing Model
- Basic Research on Adipogenesis
- Monitoring of Adhesion Behavior of Tissue Engineering Scaffolds

Aquaculture

- Fish Health Assessment and Germplasm Optimization
- Fish Immune Invasion Early Warning
- Reproductive Cell Viability Analysis

Tumor Research

- Detection of Apoptosis and Necrosis
- Analysis of Tumor Cell Migration and Invasion
- Evaluation of Chemotherapeutic Drug Activity

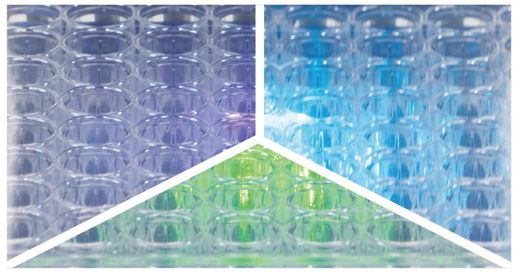
Product Advantages

Brightfield/Phase Contrast

One - key switch between brightfield and phase contrast for observing different samples.

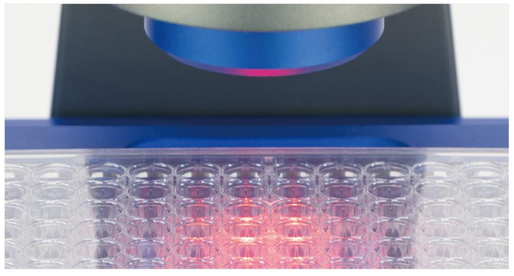
Three channel Fluorescence

Standard with B/G/U three - color excitation band fluorescence, motorized one - key switch.



Low Phototoxicity LED Light Source

625nm red LED brightfield light, with low photobleaching and cytotoxicity, protects samples,extend cell observation.

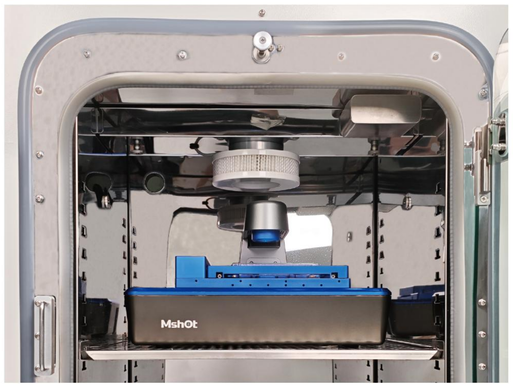


Motorized Dual Objectives

Pre - set diaphragm with dual - objective configuration, optional factory - configured magnifications of 4×/10×/20×.

Sealed, Waterproof and Corrosion Resistant

Sterilizable via alcohol, double - distilled water/pyrroloquinoline, UV; usable in CO2 incubators.

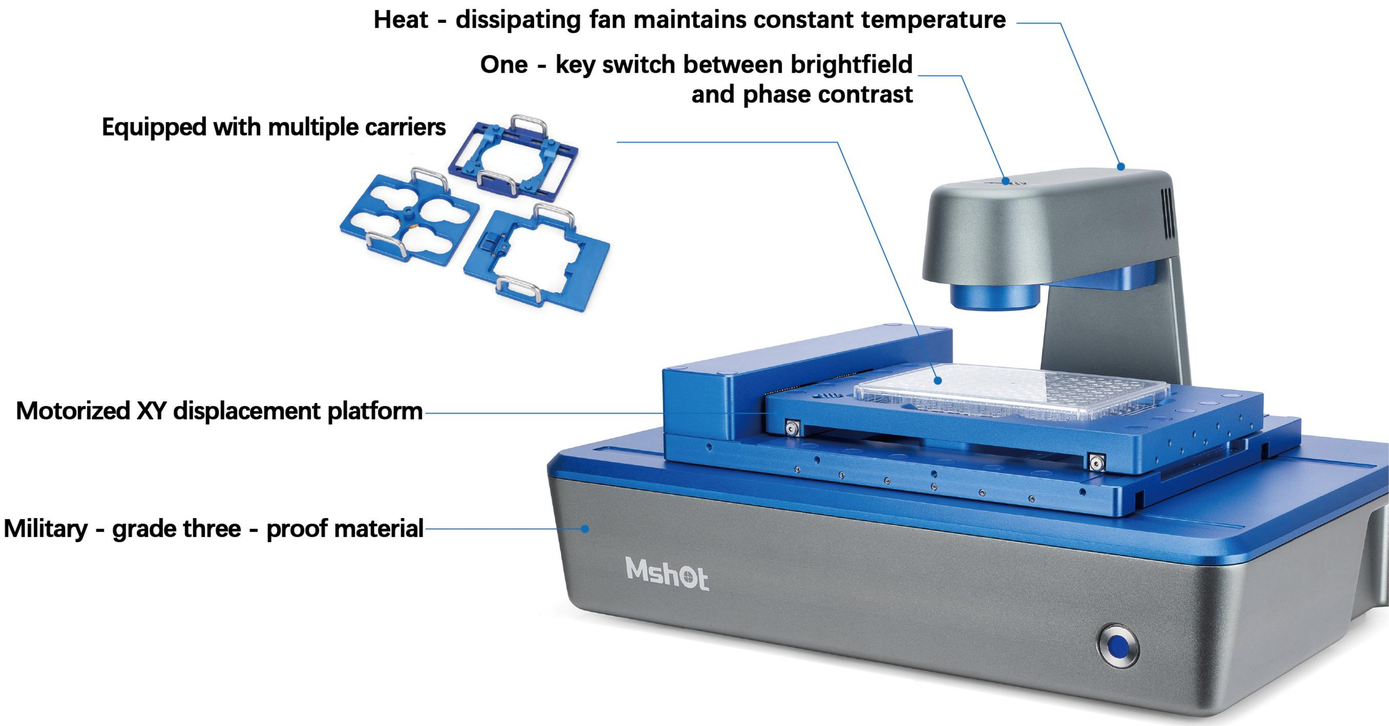


Compatible with Most Common Carriers

Multiple compatible carriers; fits various cell plates, dishes, flasks, slides and other containers; suitable for diverse experiments.

Motorized XY Stage & Z-axis Focus

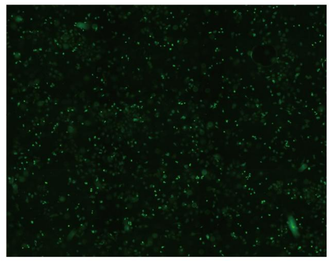
Motorized platform with XY scanning, motorized Z - axis, auto - intelligent focusing.

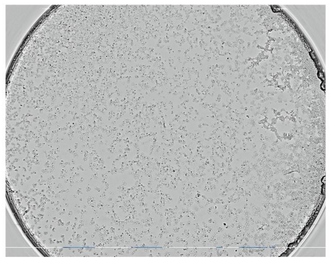


Basic Settings

One Click Whole Well Scan and Stitching

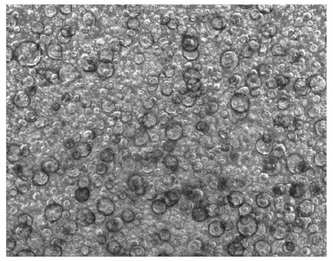
Navigational scanning setup enables grouping, free - arm skipping of any regions, stitching of scans of adjacent fields of view, and stitching of scans of the entire field of view.

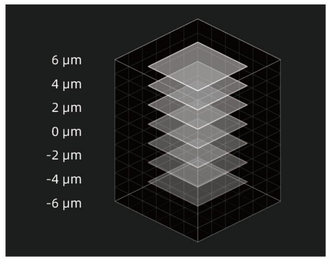




Z - stack Scan

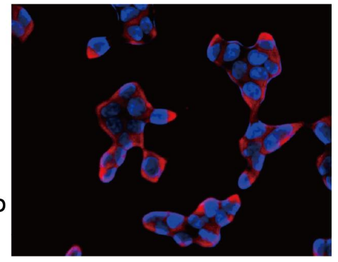
High - precision motorized Z - axis: freely set Z - stack range/step, auto - scan and layer imaging. Defocus removal algorithms enable clear imaging of thick samples (e.g., organoids).

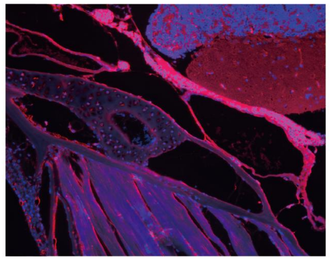




Multi - channel Scan & Overlay

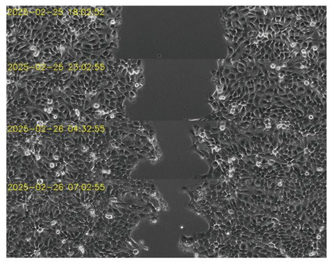
Navigational setup for multi - channel scanning, including multi - color fluorescence as well as brightfield and phase contrast channels, enabling overlay output of images from any two or more channels.





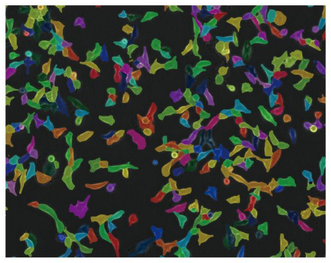
Continuous Time - lapse Acquistion

Long - term continuous shooting can generate time - lapse videos of any field of view and any duration, presenting complete information of the whole cycle of living cell samples.



Intelligent Analysis Functions

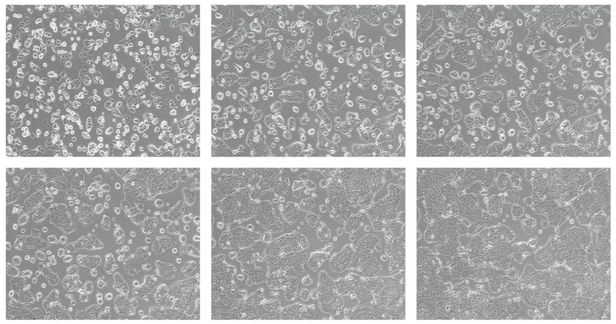
Comes with image recognition and AI deep learning modules. Matches optimal analysis algorithms for different cell experiments; expandable with advanced modules like organoid, nerve cell and tumor sphere analysis.



Analysis Function

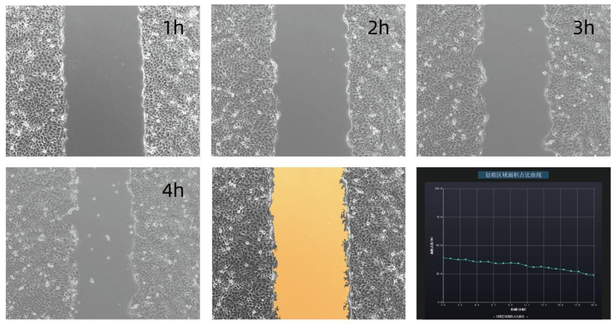
Cell Confluency

Cell confluency is the percentage of surface area covered by cells in 2D culture. Timed live - cell imaging and data analysis determine confluency, plot confluency - over - time curves and cell - count curves per channel. Widely used in cell passaging, transfection, virus infection, drug treatment, etc.



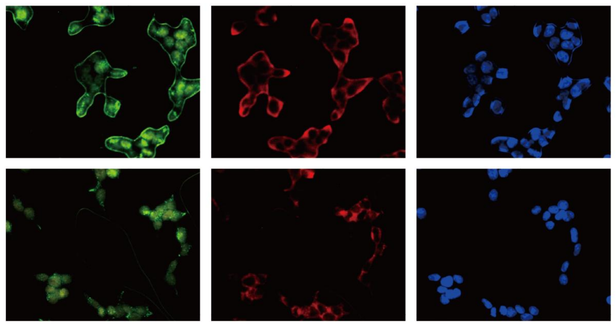
Scratch Assay

The cell scratch assay evaluates adherent cell migration. Create a “scratch” on the dish to simulate a wound, image at preset time points, and quantitatively measure cell migration between two rows. Used for researching cell proliferation, migration, wound healing, and drug screening.



Fluorescence Transfection Efficiency

Fluorescently labeled transfected cells are imaged at different time points post - transfection. Cell counting function tallies cells per channel, with records used in gene research, drug development, CGT, stem cell and organoid studies, etc.



Cell Viability

Brightfield and fluorescence images are taken. Cell counting counts total and dead cells (fluorescent). Time - point data records generate a cell viability curve. Used in cell toxicity, drug development, CGT, vaccine R&D and production.