

HoloMonitor® M4 - Ideal for Live Cell Analysis

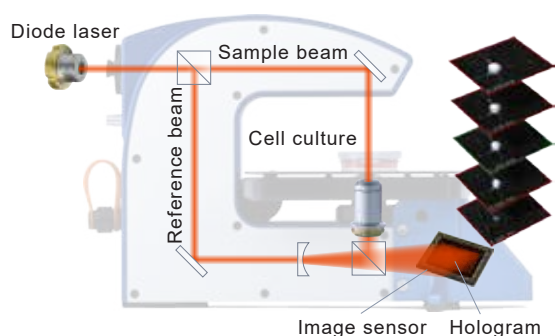
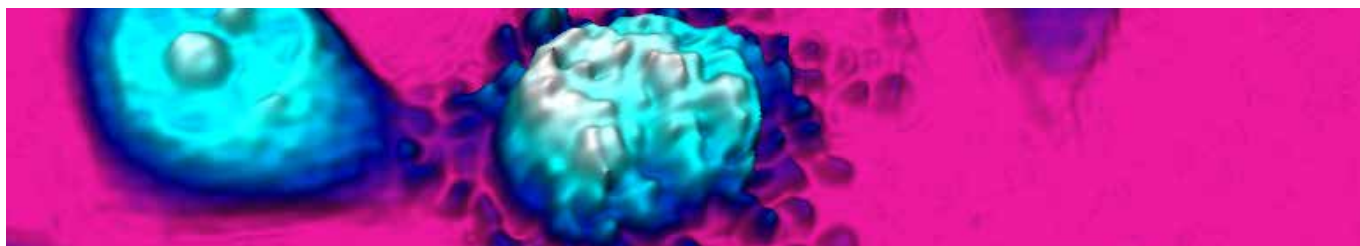


- **VISUALIZE AND QUANTIFY CELLULAR EVENTS**
HoloMonitor generates visual elements like images and videos, and in-depth analysis based on quantitative data.
- **CELL & USER FRIENDLY**
No labels or stains are required, the assay protocols are straight forward and the set-up is quick and easy.
- **IDEAL FOR KINETIC CELL POPULATION STUDIES**
Placed in the incubator, the technology used by HoloMonitor is optimal for kinetic studies such as cell growth, movement, division, and death.



ENABLING DETAILED CELL POPULATIONS STUDIES

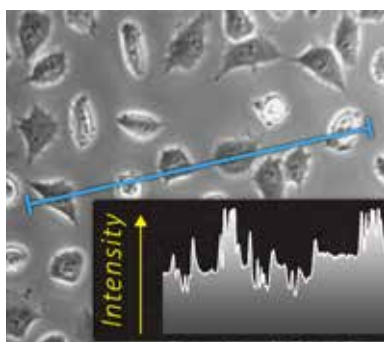
HoloMonitor® time-lapse cytometer is designed to study the life cycle and behaviour of living — or dying — cells under physiologically optimal conditions. The technique employed, holographic microscopy, is cell friendly and provides information-rich live cell images and kinetic data. Set-up and data analysis are easily done using the system software, with guided user interface and automated data presentation. HoloMonitor offers a rich portfolio of applications, where data from each cell is condensed into detailed cell populations studies providing biologically relevant results.



MAKING CELLS VISIBLE WITHOUT LABELS OR STAINS

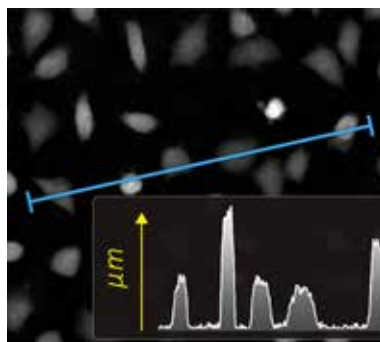
HoloMonitor M4 utilizes the principle of holographic microscopy. A low-power laser beam is split into two, one illuminating the sample and the other providing a reference beam. Laser light passing through the sample is affected by intra-cellular structures causing a phase shift of the illuminating light. Once combined, the two beams create an interference pattern which is recorded by a digital image sensor. The recorded interference pattern – the hologram – is then processed in the computer to produce a holographic image.

PHASE CONTRAST IMAGE



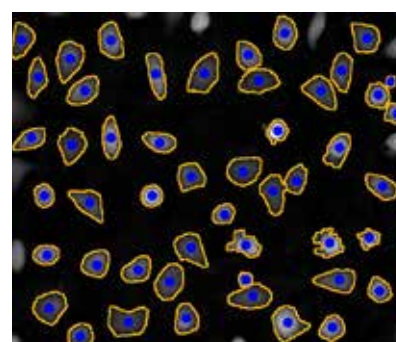
Phase contrast image of living cells. The background level cannot be accurately determined.

HOLOGRAPHIC IMAGE



The corresponding phase-shift image. There is no background and individual cells can easily be identified.

CELL IDENTIFICATION

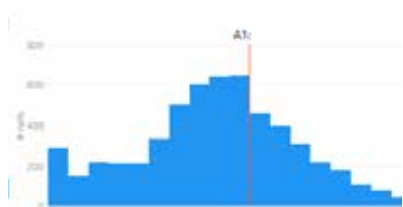


HoloMonitor software recognizes each cell as shown by the yellow boundaries.



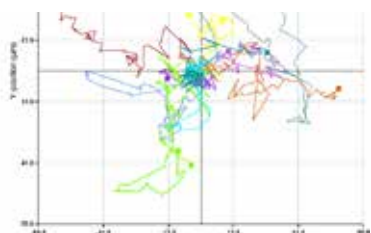
ANALYZE CELLULAR EVENTS OVER A LONG PERIOD OF TIME

The label-free technology, together with the incubator compatible design, ensures that living cells are studied in a cell-friendly environment avoiding artefacts and phototoxicity.



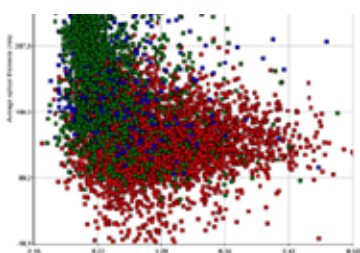
Easily check up on your cells

- Quick and quantitative live cell count and quality control
- Measurement over time provides key information about cell health, growth, and death
- 30+ morphological parameters identifying the shape, structure, form, and size of the cells



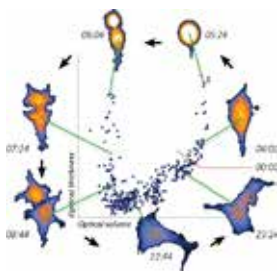
Follow each cell movement

- Motility studies with automatic result presentation
- Tracking of individual cells
- Identification of rare hypermobile cells
- Cell trees



Observe and analyze details in drug effects

- Kinetic dose-response assay
- Detect early signs of drug responses and follow the effects over time
- Understand how the cell dies
- Scatter plots of selected parameters



Analyze the cell cycle for each selected cell

- Cell cycle duration
- Changes in cell morphology
- Effects on cell cycle phase distribution

TECHNICAL SPECIFICATIONS

HoloMonitor M4 Base Unit

Sample stage: Fixed
 Light source: External laser unit, 635 nm
 Sample illumination: 635 nm, 0.2 mW/cm²
 Objective: 20×
 Lateral resolution: 1 μm
 Field of view: 0.25 mm²
 Working distance: 0.5 – 2 mm
 Autofocusing range: 1.5 mm
 Maximum image rate: 1 image/s
 Image size: 1024 × 1024 pixel
 Dimensions: 290 × 170 × 185 mm (W × D × H)
 Weight: 3.75 kg
 Cell culture vessels: 6-well, 24-well, 96-well, Petri, IBIDI

Motorized XYZ-stage (optional)

Repeatability: 5 μm
 Travel range: 100 × 70 × 10 mm (X × Y × Z)
 Dimensions*: 290 × 200 × 185 mm (W × D × H)
 Operational dimensions*: 375 × 260 × 185 mm
 Minimum space inside the incubator: 400 × 270 × 185 mm
 Weight*: 5.15 kg

*Including base unit

Sample and environment

Cells: Monolayer of adherent cells
 Incubator: Access port for cabling
 Operating temperature: 10 – 40° C
 Operating humidity: Max 95%

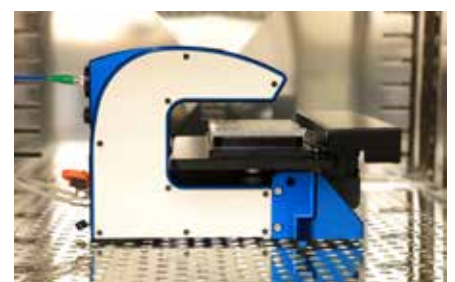
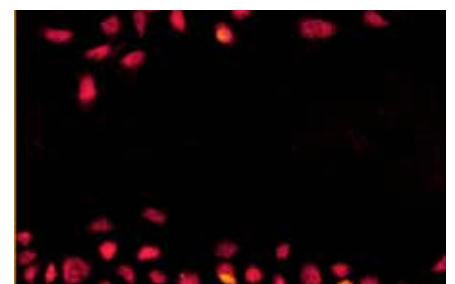
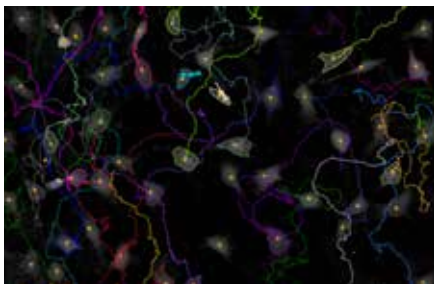
Computer

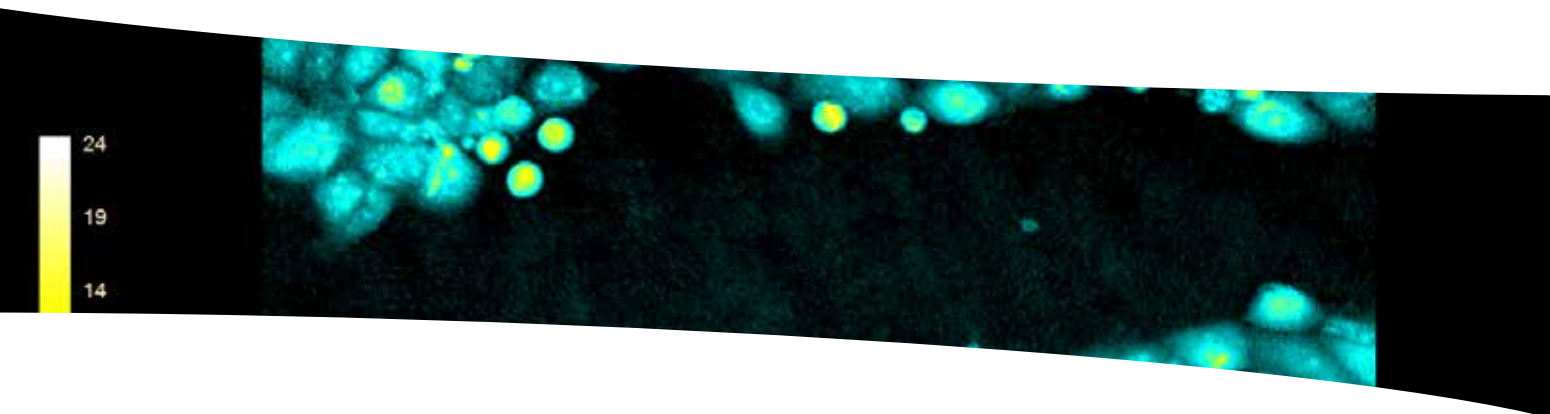
Operating system: Windows 10, 64-bit
 Processor: Intel Core i7
 Memory: 16 GB RAM (8 GB minimum)
 Hard drive: 556 GB SSD (256 GB minimum)
 and external USB3 hard drive
 Display: Full HD (1920x1080) or higher

HoloLid for superior image quality

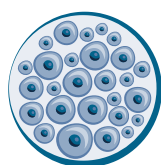
HoloLids eliminate image disturbances caused by surface vibrations and condensation inside the cell culture vessel.
 HoloLids are available for Sarstedt 35 mm Petri dishes and for multiwell plates.

For research use only, not for diagnostic procedures.





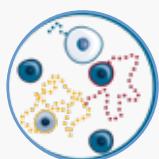
Focus on Cell Biological Applications



CELL GROWTH

Assess your cell culture integrity and kinetic cell proliferation.

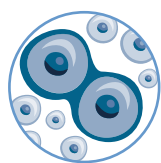
- Cell QC
- Cell Counter
- Cell Proliferation
- Morphology



CELL MOVEMENTS

Distinguish between random cell motility and directed cell migration.

- Cell Motility and Migration
- Wound Healing
- Cell Tracking



CELL CYCLE

Analyze cells through rounds of replication.

- Mitosis Duration
- Cell Cycle Analysis



DRUG RESPONSES

Analyze cytotoxic effects and understand the cell death process.

- Dose Response
- Growth Responses
- Cell Death Kinetics



holo
monitor®

” HoloMonitor M4 is a fantastic tool, easy to use, non-invasive, giving very clean 3D cell images. ”

Dr. Alain Geloën
National Institute of Applied Sciences, Lyon

Simple Workflow

1. CHOOSE APPLICATION
2. BASIC SETUP – Set experimental conditions
3. CAPTURE SETUP – Choose duration and frequency of imaging
4. CAPTURE & ANALYSIS – Automatic imaging
5. RESULT PRESENTATION – Immediate and automatic