Product Fact Sheet

MMI CellCut

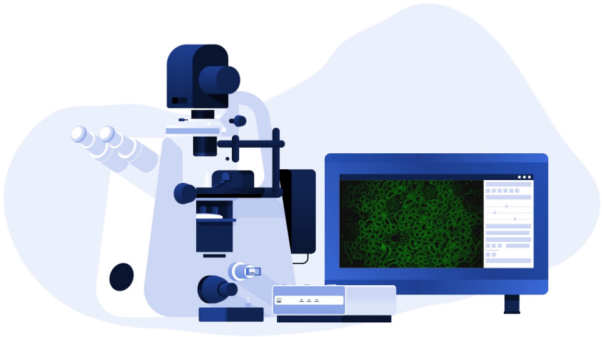


Laser Microdissection for highest sample integrity

Product name

MMI CellCut / MMI CellCut HT

Product picture – CellCut



Animated illustration of the MMI CellCut laser microdissection system. The system is compatible with inverted microscopes from various leading manufacturers.

Manufacturer information

MMI GmbH -
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Summary

Laser Microdissection serves as an essential foundation across various research domains, providing accurately defined initial material crucial for numerous subsequent experiments. For the attainment of valuable data from single cells, precisely cut cell clusters, single cells, or even subcellular components, the MMI CellCut combines the most precise cutting performance and ensures outstanding sample integrity with the highest flexibility and ease of use.

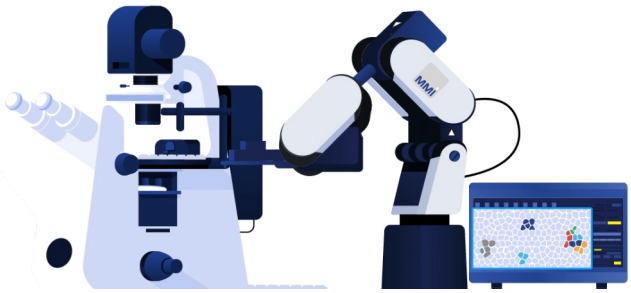
MMI – Leader in Laser Microdissection

With over 20 years of experience in laser microdissection, the team at Molecular Machines & Industries stands out from the crowd. Our dedicated group of researchers have developed the most precise laser microdissection system on the market. The gentle cutting guarantees a homogeneous cell population for meaningful downstream analysis.

High-throughput version – CellCut HT

The CellCut laser microdissection system is fully expandable with an automated high-throughput version — the CellCut HT. This system enables the isolated regions of interest, such as single cells, can be automatically collected into 96-well plates, enabling efficient and standardized sample preparation for downstream applications.

Product picture – CellCut HT



Animated illustration of the CellCut HT for high-throughput automated laser microdissection. The system is compatible with inverted microscopes from various leading manufacturers.

Specifications

Features	Description
Compatible microscopes	Inverted or upright research microscopes • Olympus IX-73/83/85 • Nikon Ti2 (U,E) • Zeiss Axio Observer • External z-Drive motorisations for different manual inverted microscopes
Laser system	Standard Laser: • For cutting normal biological material • Waveleanght: 355 nm • Pulse width: < 1 ns • Repitition rate: 2 kHz • Pulse energy (typical): > 1 µJ • Average power (nominal): < 5 mW Universal Laser: • For cutting all common biological materials • Waveleanght: 355 nm • Pulse width: < 1 ns • Repitition rate: 4 kHz • Pulse energy (typical): > 2 µJ • Average power (nominal): < 10 mW High Power Laser: • For cutting very hard material such as teeth, bones or forensic tapes • Waveleanght: 349 nm • Pulse width: < 1 ns • Repitition rate: 500 Hz • Pulse energy (typical): > 100 µJ • Average power (nominal): < 35 mW
Workspace	CellCut • 1.20 m × 0.90 m CellCutHT • 1.00 m × 2.00 m
Camera	MMI CellCamera VCXU23c • CMOS sensor • 1920 x 1200 pixels • >45 fps, full resolution, live view, best color calculations Advanced Camera Options • Various MMI cameras • Hamamatsu high-performance scientific cameras • Specifications can be found in the CellCut Manual

Specifications

Features	Description
Samples	For all application-relevant samples • Cryo or paraffin-preserved tissues • Single cells • Cell compartiments • Cytospins • Chromosomes • Plant tissue • Smears • Living cells
Sample isolation	CellCut • IsolationCaps: 0.2 ml, 0.5 ml and 1.5 ml • MultiCap (optional): 8-Cap strips (0.2 ml) • All Caps available as diffusor caps (ideally for stained samples) and transparent caps (ideally for fluorescent samples) CellCut HT • Automatic isolation in 96-well plates
Collection principle	CellCut - CapLift technology • Computer-controlled • Contamination-free sandwich technology • High repositioning accuracy • Adjustable contact pressure between cap and slide CellCut HT - High-throughput • Computer-controlled • Contamination-free • Automated • Collection of 96 samples in 10 minutes
Z-Drill function	Cutting of wet and thick tissue without the need for increased laser power. The laser is refocused through the sample and so facilitates cutting in a spiral

Features	Description
Software	• MMI CellTools software for Windows 10 / 11 • Computer-controlled laser power, focus position and cutting speed • Free-hand drawing or predefined figures: circles, squares, ellipses • Multi-segment drawing for objects larger than the field of view • Automatic cutting of marked areas and collecting of dissected samples, • Group cutting functions including group statistics • Automatic documentation with immediate access to report • Serial section function: allows the marking of target regions onto one or more unstained sections by using a stained top section as a template • Differences in shape, angle and position are automatically compensated by the software giving highly accurate results
Cell shape import and alignment	• Import of cell shape ROIs into the laser microdissection system • Cell shape alignment using 3 reference points derived from recognizable sample features, such as specific cells, anatomical structures, or geometrically unique areas of the tissue • Compatible data formats: XML, JSON, CSV, TIFF, HALO
Fluorescence light sources (optional)	Lumencor Spectra III • Sources: 8 solid-state sources including LEDs, lasers and proprietary luminescent light pipes • Wavelengths: 380 - 750 nm • Bandpass Filters: Integrally installed bandpass filters for spectral output refinement Additional fluorescence sources available from respective microscope manufacturer

Specifications

Features	Description
Predefined target positioning	Isolation of multiple samples on a single IsolationCap or well-plate without sample overlay
Motion control (Motorised stages)	Standard stage • Scanning area: 120 × 100 mm^2 • Repositioning accuracy: < 1 µm • Step resolution: 0.156 µm • Speed: 50 mm/sec Long travel scanning stage • Scanning area: 280 × 82 mm^2 • Repositioning accuracy: < 1 µm • Step resolution: 0.075 µm • Speed: 25 mm/sec
Microscope incubator / Stage top incubator (optional)	• Temperature control • Hepa filter • CO_2 / humidity control • Oxygen control
CellCut upgrades	• Automated high throughput laser microdissection system (MMI CellCut HT) • Single cell isolation in suspensions (MMI CellEctor) • Digital slide scanner module (MMI CellScan) • Automated detection of biological samples (MMI CellDetector) • Optical tweezers (MMI CellManipulator)
PenScreen (optional)	Sensitive 24” touch screen monitor for user-friendly system operation
PC and monitor	Specifications will be continuously updated according to market development

Ordering information

Article No.	Item
[10200]	MMI CellCut Standard
[102001]	MMI CellCut Universal
[102002]	MMI CellCut High Power
[102003]	MMI CellCut HT

Key features

- Highest sample integrity by airtight and sterile cutting and collection
- The most precise cutting performance on the market, ensuring the thinnest and cleanest cuts
- Visual inspection and documentation of cut samples
- Automated high-throughput isolation in 96-well plates using CellCut HT
- CellCut is the most versatile laser capture microdissection system available

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