

ACCUVA CELLECT

LASER CAPTURE MICRODISSECTION



Discover More with Laser Capture Microdissection

Power and precision for microgenomics

Laxco Accuva Collect Laser Capture Microdissection (LCM) System combines the power of infrared (IR) laser capture and ultraviolet (UV) laser cutting in one unique, compact platform. The solid-state IR laser delivers a gentle capture technique that preserves the overall biomolecular integrity of cells, optimized for individual cells and a small groups. The solid-state UV laser permits superior speed and precision, and is well suited for microdissecting dense tissue structures and rapidly capturing large numbers of cells.

This dual-laser system designed for laser capture microdissection, along with Laxco ensures that sample custody is maintained at all times, thereby enabling researchers to uncover unique molecular signatures that would otherwise be obscured in a heterogeneous cell population.

Breadth of applications

The ability to identify and study pure cell populations can facilitate microgenomic analysis in key research areas including oncology, neuroscience, and proteomics, as well as emerging application areas such as plant biology and forensics (Figures 1 and 2). The Accuva Collect LCM System can be used to isolate just a few cells in a group or a single cell from a wide variety of sample types, including tissue, blood, semen, and live-cell samples, depending on the application.

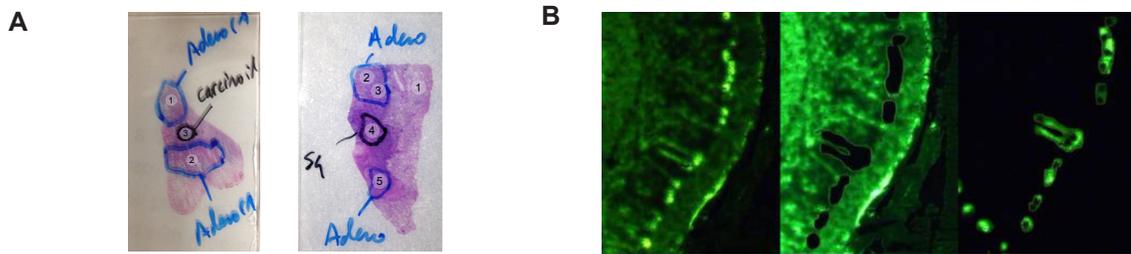


Figure 1. Applications of LCM in oncology and neuroscience. (A) Hematoxylin- and eosin-stained sections and LCM-collected regions of lung cancer tumors. These two slides were collected for a study showing that LCM reveals variant alleles that cannot be detected in whole-tissue scrapes. (B) Microdissected neurons expressing GFP. The images show, from left to right, the neurons before LCM, after LCM, and the captured cells.

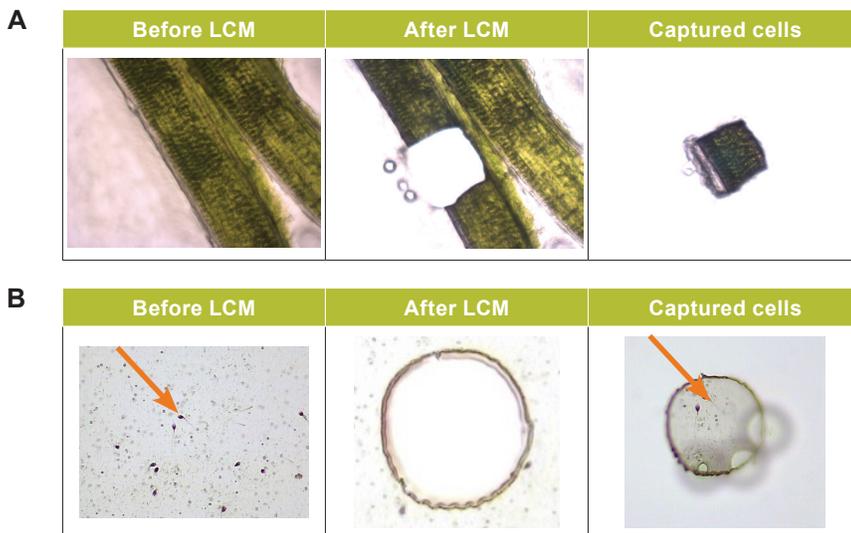


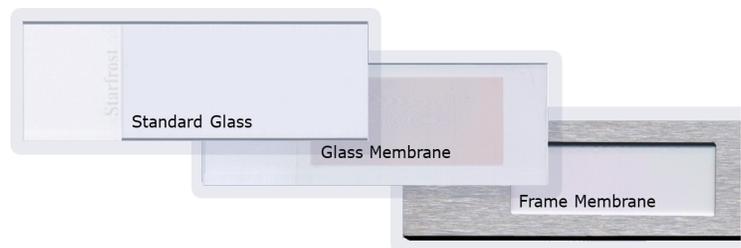
Figure 2. Emerging application areas of LCM: plant biology and forensics. (A) *Poa pratensis* (Kentucky bluegrass) live whole-mount preparation, microdissected using IR laser capture and UV laser cutting. (B) Sperm cells from mixed forensic smear, microdissected using IR laser capture and UV laser cutting.

Ultimate flexibility in sample source and preparation

The unique combination of IR laser capture and UV laser cutting permits the use of any slide type and any sample preparation method for contamination-free sample collection (Figure 3). Choose from glass membrane slides for contact microdissection or framed membrane slides for noncontact microdissection. Unlike other systems, the Accuva Collect LCM System also permits the efficient use of low-cost plain glass slides.

Any of the following specimen preparations may be used:

- Thin or thick sections
- Fresh-frozen or formalin-fixed, paraffin-embedded (FFPE) tissues
- Fine-needle aspirates
- Chromogenic-stained, fluorescently stained, or unstained sections
- Hydrated or dehydrated specimens
- Forensic smears
- Live plant whole-mount preparations
- Live cell culture



Complete system for microgenomic

Validated reagents for staining, DNA extraction, RNA extraction and isolation and amplification to prepare for downstream analysis

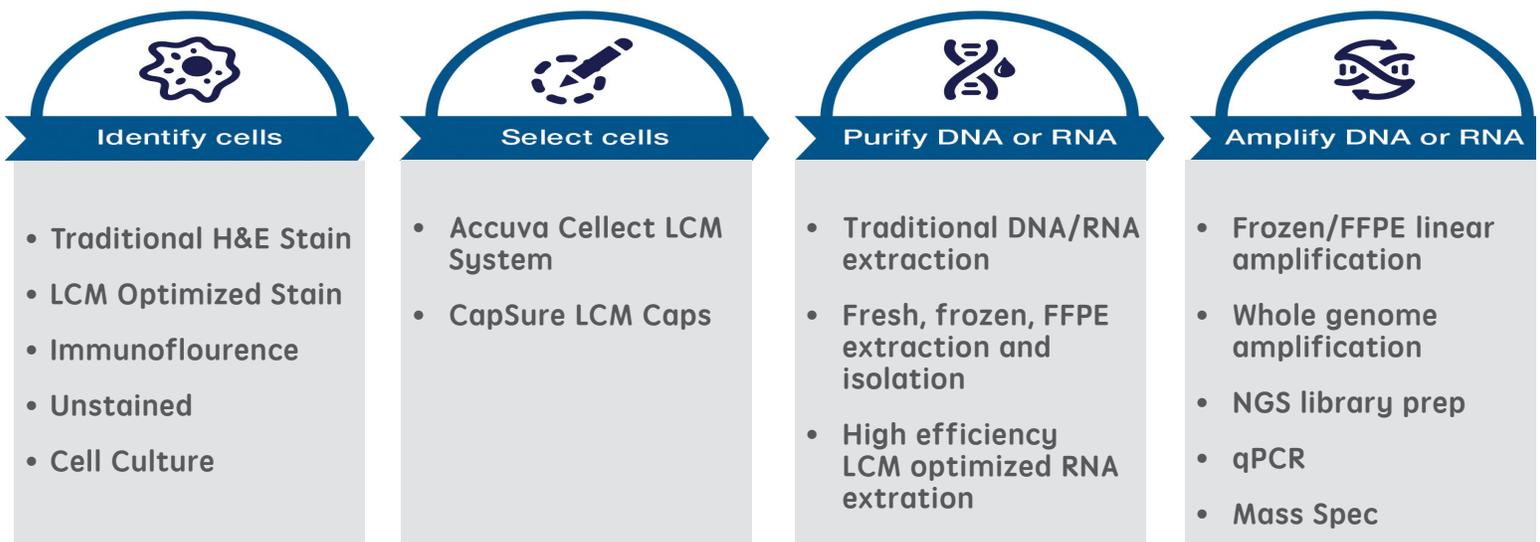
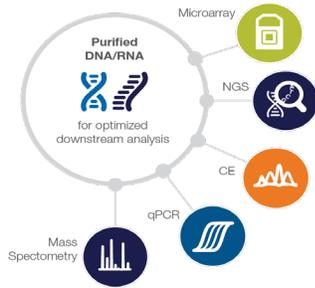


Figure 3. Experimental Workflow for LCM. Depending upon the sample types and the applications needed in the microgenomics workflow, we have a variety of validated kits-for steps from identifying and selecting cells to isolating the purifying RNA and DNA

Our optimized solutions for gene expression analysis, next-generation sequencing (NGS), and Sanger sequencing will help streamline your downstream analysis as well. Our innovative technologies enable faster and more affordable sequencing results.



You can also count on our superior technical and applications support. Our dedicated team of highly qualified and professionally trained application scientists and technical support specialists can assist researchers in any molecular or cellular biology research area.

Protect the integrity of microdissected cells

Specially designed for research use with the Accuva Collect LCM System, all CapSure LCM caps have a transfer film bonded to the lower cap surface. Using the Accuva Collect LCM System, an infrared laser is pulsed

through the top of the cap and interacts with the transfer film, which then distends and adheres to individual cells or regions of interest. The film—instead of the tissue or cell sample—absorbs the laser energy, resulting in gentle, nondamaging microdissection that preserves the integrity of the captured material.

The Accuva Collect LCM System enables the easy exchange of stage inserts to accommodate alternate sample formats such as larger slides and Petri dishes, which are ideal for neurobiology studies and live-cell experiments (Table 1). Each instrument has an interactive touchscreen display, a trackball-actuated stage, and a mouse for easy and ergonomic navigation choices. Additionally, long-lasting LED illumination for both brightfield and fluorescence provides precision lighting for high-quality imaging.



Table 1. Accuva Collect LCM System specifications.

Attribute	Detail
Lasers	UV cutting laser: solid-state, diode-pumped (355 nm) IR capture laser: solid-state, near-IR (808 nm)
Illumination	High-intensity LED illumination system
Objectives	2x, 4x, 10x, 20x, 40x, 60x objectives
Stage	Motorized, trackball-actuated in X and Y axis with 1 μm precision Stage inserts for 3 traditional slides (75 x 26 mm), 2 large-format slides (75 x 50 mm), or 1 Petri dish (50 x 7 mm)
Contrast methods	Brightfield, phase contrast Optional: Fluorescence (LED)
Computer	Onboard PC (Intel™ NUC) with Microsoft™ Windows™ 10 software
Display	Large Ultra HD touchscreen display

Easy-to-use software

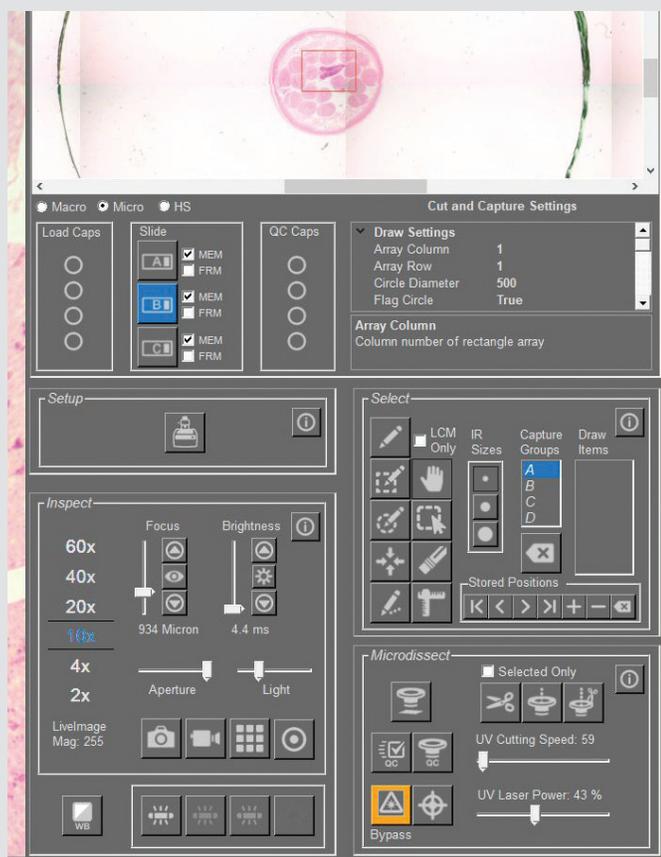
Laxco Accuva Software included with your instrument simplifies the LCM workflow. With the click of a mouse, you can control all of the system operations, including stage translation, slide and objective selection, focus and light intensity, laser parameters, cap transfers (including QC confirmation), and camera settings (Figure 4).

Tracking your sample

Electronic documentation makes it simple to record each step of the process before and after microdissection. Static images and live video can be taken at any point during the process, providing a record of the entire experiment. View the CapSure LCM caps at the QC station for positive identification of captured material, and utilize capture groups to display and track all individual and group area measurements.

Automated image analysis

The Laxco AutoScan Software for image analysis automatically identifies cells and regions based on user-defined criteria, which greatly helps reduce the overall time required to perform microdissection. This module can be used to analyze an individual image, tiled images, the area under a CapSure LCM cap, or the entire slide area. AutoScan Software performs optimally on high-contrast samples and may be used with colorimetric, fluorescent, and IHC-stained specimens. Once the regions have been automatically identified, the user proceeds directly to standard microdissection using the Accuva Collect LCM instrument.



Step 1: Set up

Load materials onto stage and input important study information.

Step 2: Inspect

Identify cells of interest using the fully automated microscope tools, including autofocus and digital zoom.

Step 3: Select

Use simple drawing tools to designate cells for microdissection by drawing freehand or using defined-area circles.

Step 4: Microdissect

Save time and increase productivity with easy-to-use tools for laser cutting and laser capture.

Step 5: QC

Inspect the microdissected material on the LCM cap for positive identification, documentation of captured material, and assurance of proceeding downstream with the exact cells of interest.

Figure 4. Operation workflow. Go from sample loading to extraction of biomolecules in just five steps.



Ordering information

Description	Quantity	Part Number
Accuva Instruments		
Accuva Collect LCM System	1	LCM-BF1
With fluorescence option	1	LCM-FL1
CapSure LCM caps and Arcturus accessories		
CapSure Macro LCM Caps	48	LCM0211
CapSure LCM MicroCaps	48	A30153
CapSure HS LCM Caps	32	LCM0214
PEN Membrane Frame Slides	50	LCM0521
PEN Membrane Glass Slides	50	LCM0522
Live Cell Growth Chambers, Sterile	6	5000300
Microdissection Petri Dishes, Sterile	6	5000301
Microgenomics reagents		
Histogene LCM Frozen Section Staining Kit	72	KIT0401
Histogene LCM Immunofluorescence Staining Kit	32	KIT0420
PicoPure DNA Extraction Kit	30 -150	KIT0103
PicoPure RNA Isolation Kit	40	KIT0204



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