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Miltenyi Biotec

Automation meets parallel cell separation

MultiMACS™ Cell Separator Family





MultiMACS Cell24 Separator Plus

Fast processing of multiple samples in parallel

Efficient parallel cell separation

Whether you are following a positive selection or an untouched strategy, the MultiMACS Cell24 Separator Plus enables handling of up to 2 columns in parallel. Parallel separation is fast and ensures identical treatment of all samples for highly reproducible results.

The instrument is designed for the isolation of virtually any cell type from any source and is compatible with many downstream applications such as molecular and functional assays, chimerism analysis, and flow cytometry.



Figure 1: The MultiMACS Cell24 Separator Plus accessories enable higher flexibility to plan your separation.

Standardized elution

The vacuum-driven elution station ensures gentle elution of positively selected cells for excellent purity and maximal cell viability. A vacuum pulse guarantees simultaneous elution with identical parameters for every sample. Deep Well Plates or 5 mL tubes in the Tube Rack can be used to collect the positive and negative fractions.

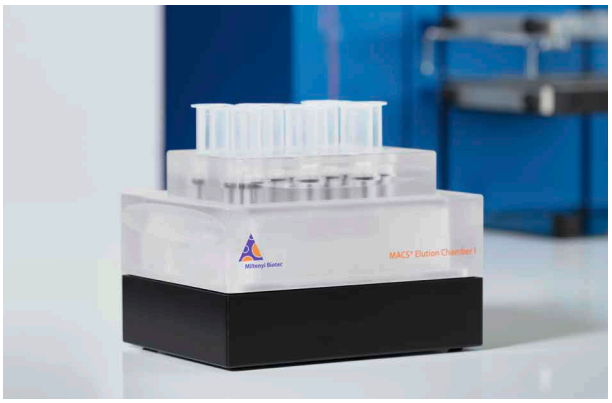


Figure 2: MACS® Elution Station and Elution Chamber enable positive and untouched isolation.

Easy-to-use touchscreen interface

The intuitive touchscreen interface guides you through the separation process every step of the way, thus minimizing inter-operator variability and helping you obtain consistent results.



Figure 3: The touchscreen interface is intuitive and easy to use.

Scalable to your needs

A versatile separator that adapts to your experimental requirements

From different amounts of samples to large sample volumes

The MultiMACS Cell24 Separator Plus enables convenient processing of various samples in parallel or large-volume samples. Using the Multi-24 Column Block or the Single-Column Adapter, you can easily vary the number of samples to process in one run. The Multi-24 Column Block enables convenient handling of up to 24 samples. For cost-effective cell separations with smaller sample numbers, the Single-Column Adapter allows you to use between one and 12 single columns. Large-volume samples such as Leukopaks® are divided evenly between the columns and combined at the end of the run to ensure high-quality separations from every sample, regardless of the volume.

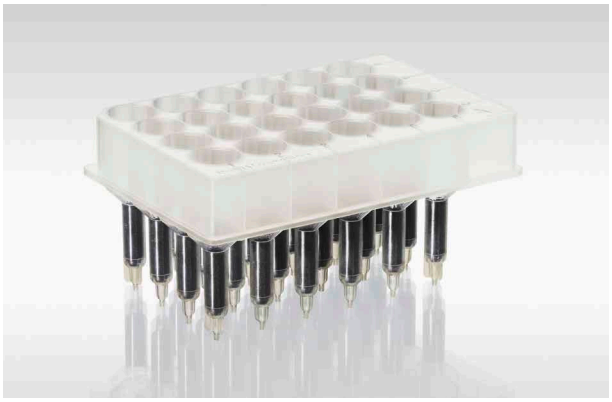


Figure 4: The Multi-24 Column Block simplifies handling of large numbers of columns.

Different columns for various separation strategies

The different column options enable you to adapt to sample size, type, and separation strategy. The Multi-24 Column Block supports both positive selection and depletion. The Single-Column Adapter is compatible with LS, LD or Whole Blood Columns.

LS Columns are optimized for positive selection and depletion of strongly magnetically labeled cells. LD Columns are optimized for depletion and Whole Blood Columns are optimized for cell isolation directly from whole blood, bone marrow, and buffy coat.



Figure 5: The Single-Column Adapter enables the use of single LS, LD or Whole Blood Columns with the MultiMACS Cell24 Separator Plus.

Column	Max. number of labeled cells	Max. number of total cells
Multi-24 Column Block (per column)	1×10^8	1×10^9
LS	1×10^8	1×10^9
LD	1×10^8	5×10^8
Whole Blood Column	up to 10 mL of whole blood	up to 10 mL of whole blood
Multi-24 Whole Blood Column Block (per column)	up to 10 mL of whole blood	up to 10 mL of whole blood

Automation meets cell separation – MultiMACS X

For demanding high-throughput cell processing laboratories

Walk-away automation

The MultiMACS X is a benchtop platform that combines the benefits of the MultiMACS Cell24 Separator Plus and an integrated liquid handling robot. Full automation eliminates hands-on steps otherwise performed by the operator, such as sample transfer onto the column, washing steps, and buffer pipetting. Magnetic labeling is performed automatically and samples are incubated on the worktable, allowing the user to focus on other tasks without manual interaction with the instrument.



Figure 6: Samples are labeled and incubated on the deck, allowing full walk-away automation.

Efficient and precise robotics

The 4-tip liquid handling system of the MultiMACS X combines reliability with high pipetting precision. The liquid detection system controls the handling of blood and tissue samples, ensuring highly reproducible results. Automated pipetting reduces inter-operator variability, saves time, and improves operator safety. Further workflow efficiency and additional time savings are achieved by the robotic manipulator arm that works in concert with the liquid handling arm, transferring the columns and consumables, as well as ensuring that the pipette tip containers and fraction containers are exchanged when needed.

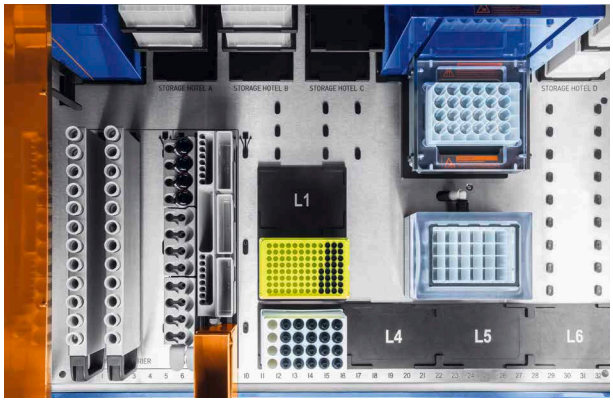


Figure 7: The MultiMACS X workdeck is designed to make loading of the instrument fast and simple.

Passive cooling of liquids

The MultiMACS X Chill Racks allow you to keep your samples and reagents at 2–8 °C. By eliminating temperature variations, you achieve higher cell viability rates and reduce alterations in gene expression.



Figure 8: Cooled Chill Racks keep the samples and reagents at 2–8 °C.

Customized excellence

Validated protocols optimized for your workflow

Intuitive software including tracking and documentation

The touchscreen interface is easy to use for any lab professional and guides users through the automated cell separation process. Access and operation can be restricted to authorized users. During the process, specific sample IDs and reagent information can be recorded by scanning the appropriate barcodes, thus enabling detailed tracking of each sample and a thorough documentation of the separation process. This documentation can subsequently be made available to laboratory information management systems (LIMS).



Figure 9: The intuitive user interface guides the user through the loading steps.

Customized applications for the perfect fit

Every application on the MultiMACS X is specifically tailored for each customer, ensuring the perfect match for your workflow. This approach enables integration of additional steps such as sample aliquoting or labeling for flow cytometry.

With its underlying open architecture, the MultiMACS X offers great flexibility and can be easily integrated as a fully automated cell separation module into any automated cell processing workflow. This minimizes risk, costs, delays, and implementation time.

The MultiMACS X can also be installed into third party laminar flow cabinets to ensure a sterile experiment environment.

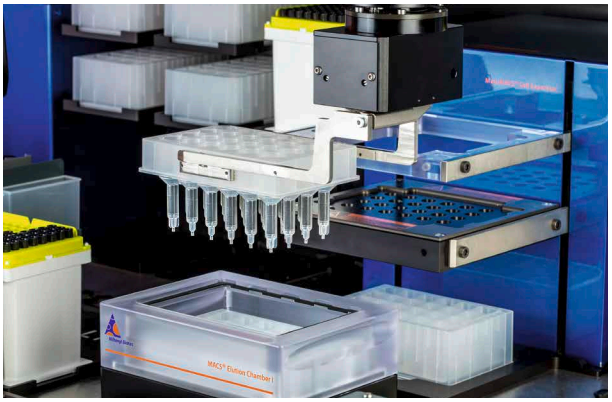


Figure 10: The MultiMACS X is equipped with a gripper arm and a 4-tip liquid handling arm for maximal flexibility and reliability with different applications.

A catalyst for success

Key applications – highlights of proven performance

Separation of immune cells from blood products

Separation of leukocytes directly from blood products with a MultiMACS Instrument in combination with StraightFrom® MicroBeads is easy and cost effective. It provides you with large amounts of highly pure and viable cells, ready for downstream experiments. For individual samples up to 10 mL simply use the Whole Blood columns. Larger volumes can be split and applied to many columns in parallel, resulting in a quick, easy, and budget-friendly separation.

Hematological malignancies

Assay sensitivity is improved by pre-enrichment of rare cells for Multiple Myeloma, Chronic Lymphocytic Leukemia, and Minimal Residual Disease research.

Chimerism testing

Pure cells are a prerequisite for sensitive lineage-specific chimerism analysis. Isolate several samples directly from blood products with a MultiMACS Instrument in combination with the MACSprep™ Chimerism MicroBeads.

Microglia isolation

Eliminate the unnecessary labor and decrease the risk of cell modifications and culture contamination with MACS Myelin Removal Beads. Get a higher yield of viable cells and separate “trash from treasure” using a MultiMACS Instrument.



Tumor samples

Whether you are isolating tumor-infiltrating lymphocytes (TILs) or depleting mouse cells from xenograft tumors, a MultiMACS Instrument together with the Multi-24 Column Block is a useful tool for handling many samples in parallel. Both positive and untouched isolations are possible, and the MACS Columns are compatible with virtually any sample or tissue type.

Protecting your investment

Support and service contracts

Miltenyi Biotec provides premium technical support to meet the demands of even the busiest laboratories.

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Planned maintenance	●
Replacement of worn parts	●
Software updates	●
Labor, shipment, and product maintenance logistics	●
Maintenance intervals (per year)	1
Repairs	
Repair and replacement	●
Labor and travel expenses	●
Replacement parts	●
Loaner equipment	●

Ordering information

Product	Order no.
MultiMACS Cell24 Separator Plus	
• MultiMACS Cell24 Separator • MACS Elution Station • Elution Chamber Base • Elution Chamber Lid I • Elution Chamber Lid II • Multi-24 Column Block (130-095-692) • 2× 24-well Deep Well Plate, sterile packed • Single-Column Adapter • MultiMACS 5 mL Tube Rack (130-095-331) • Column Blank Holder and 9 Column Blanks • Tubing	130-098-637
MultiMACS X	
• MultiMACS X Separator Base unit • MACS Elution Station X • MultiMACS X Barcode Reader • MultiMACS X System Liquid Container • MultiMACS X Waste Container • Reagent Chill Rack X • Single-Column Adapter LHS • 15 mL Sample Chill Rack X • 50 mL Sample Chill Rack X	130-118-515

Consumables	Order no.
Multi-24 Column Block	
• Multi-24 Column Block • 24-well Deep Well Plate, sterile packed	130-095-692
• Multi-24 Whole Blood Column Block • 24-well Deep Well Plate, sterile pecked	130-130-259
Multi-24 Column Blocks	
• 8× Multi-24 Column Block • 8× 24-well Deep Well Plate, sterile packed	130-095-691
Columns	
LS Columns	130-042-401
LD Columns	130-042-901
Whole Blood Column Kit	130-093-545
24-well Deep Well Plates	
• 2×2 24-well Deep Well Plates	130-110-500
Single-well Deep Well Plates	
• 4× Single-well Deep Well Plates	130-114-966

Technical data

MultiMACS Cell24 Separator Plus	
Footprint	23 × 43 cm
Height	23 cm
Weight	11 kg
Input voltage	100–240 VAC, 50–60 Hz
Power consumption	200 W

MultiMACS X	
Footprint	107 × 99 cm
Height	102 cm (from benchtop)
Weight	188 kg
Input voltage	100–240 VAC, 50–60 Hz
Power consumption	600 W

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