Miltenyi Biotec

# autoMACS® NEO Separator

## Select the best to unlock the power of automated cell separation

# A whole NEO world of cell separation possibilities

The autoMACS NEO Separator is now the benchmark for automated cell separation. The fast and gentle isolation of any cell type makes it ideal for diverse downstream applications, such as flow cytometry, functional assays, or omics studies.

With technology that has been proven in thousands of peer-reviewed publications, the autoMACS Separator is the most trusted automated magnetic cell separation instrument on the market. Now, the autoMACS NEO Separator is going to take this even farther with the following advances and features.

## Work smarter – Save hands-on time

Intelligent sample handling facilitates time-efficient sample processing.

## Gain flexibility – Regardless of your starting material

Isolate any target cell from blood products, bone marrow, PBMCs, and single-cell suspensions from dissociated tissues.

## Optimize your results – Programs that fit your downstream applications

Specialized programs on the autoMACS NEO Separator are optimized to exactly match your needs and downstream applications.

## Trust your results – Standardize your protocols

Isolate your immune cells in a routine way each time and ensure accurate sample handling while reducing user variation and errors.


# Contents

# MACS Technology for outstanding cell separation

MACS MicroBead Technology is the leading method for magnetic cell isolation.

MACS Technology enables the magnetic separation of cell populations by targeting surface antigens with specific antibodies conjugated to superparamagnetic beads. Labeled cells are magnetically retained in a separation column, from which they can be eluted. The fast and gentle isolation minimizes cellular changes and ensures high viability.

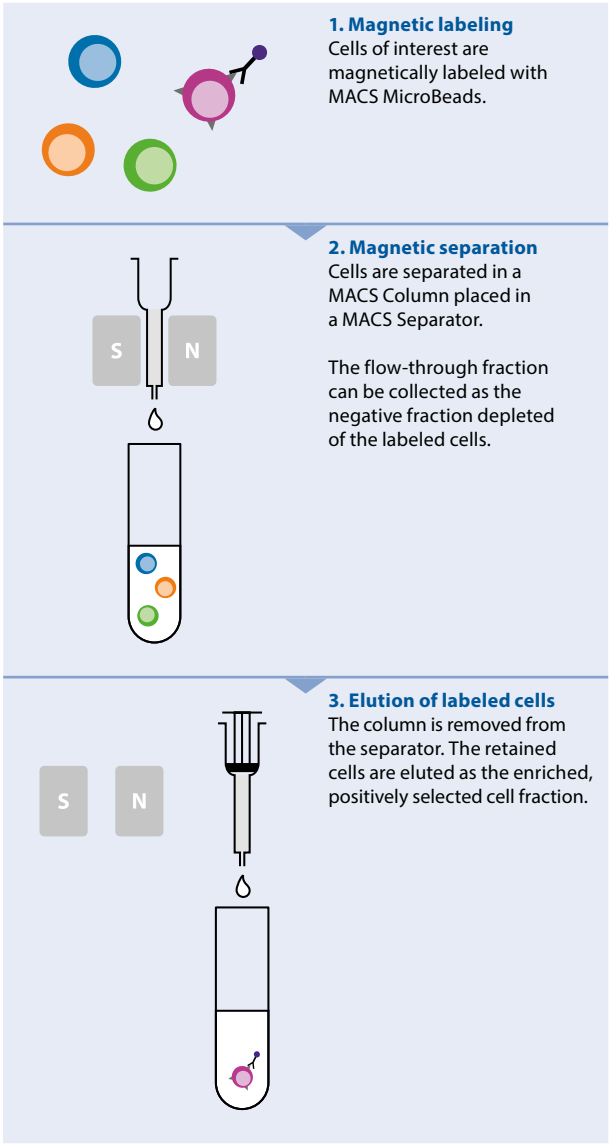



**Figure 1:** The three easy steps of cell separation with MACS Technology.

# Reagents that fit your needs

The nano-sized MACS MicroBeads are the smallest beads available. They are non-toxic, biodegradable, and compatible with all downstream applications, from basic research to clinical.

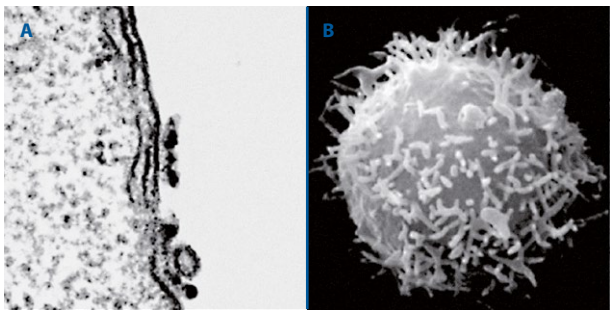



**Figure 2: Features of MACS MicroBeads**
(A) Scanning electron microscopy of a cell isolated with MACS MicroBeads (B) 50 nm MicroBeads are so small they can only be seen on a Transmission Electron Microscope.

Adaptable labeling strategies with MACS MicroBeads give you full flexibility for your downstream applications. Choose between various separation strategies for positive cell selection, depletion, or untouched isolation from any starting material; including blood products, bone marrow, PBMCs, and single-cell suspensions from dissociated tissues. Included in the autoMACS NEO software there are specialized programs for each reagent to isolate your target cells with the highest purity, recovery, or speed.

| Sample volume input on the autoMACS NEO | |
|---|---|
| PBMCs and dissociated tissue | Manual labeling: 0.1 mL – 42 mL<br>Autolabeling: 0.03 mL – 39.5 mL |
| Whole blood, bone marrow, and buffy coat | Manual labeling: 0.4 mL – 26.7 mL<br>Autolabeling: 0.25 mL – 28 mL |

**Table 1:** autoMACS NEO processing volumes.

LEARN MORE

Explore our vast reagent portfolio and labeling strategies on our website.

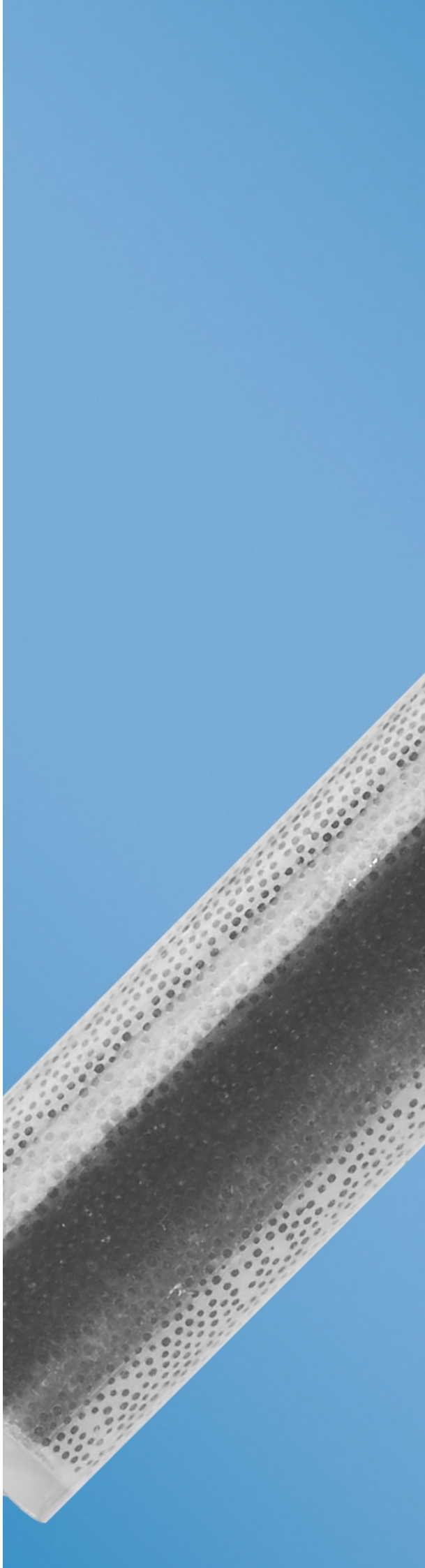
▸ **miltenyibiotec.com/NEOreagents**

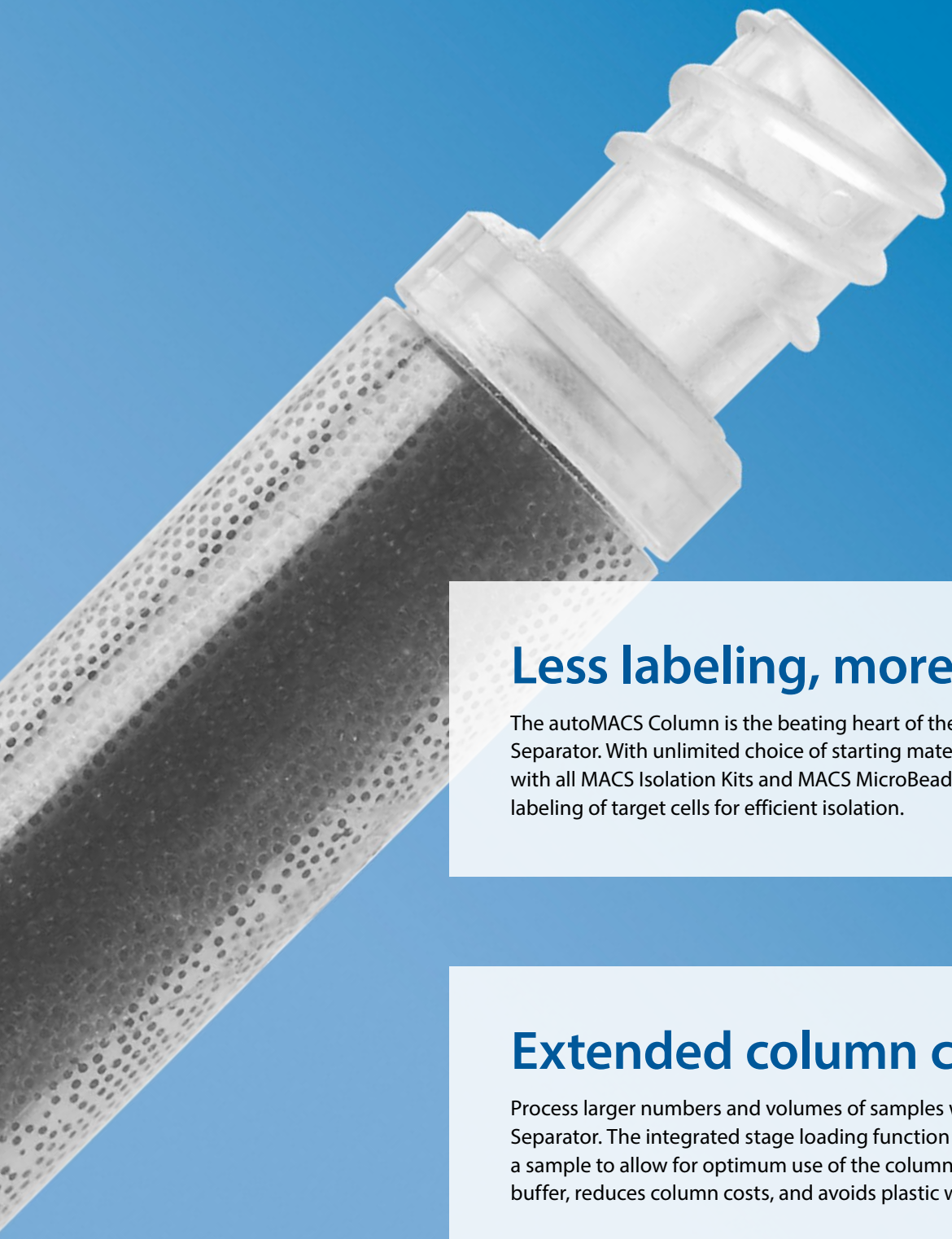

Miltenyi Biotec
Chill 5 Rack
Rack 8

# autoMACS Columns make all the difference

autoMACS Columns contain a matrix composed of ferromagnetic spheres with a cell-friendly coating. When a column is placed into the magnetic separator, the spheres amplify the magnetic field 10,000-fold. In this high magnetic gradient, minimally labeled cells are selectively isolated, while a significant number of epitopes remain free for concurrent antibody staining.

For your downstream assays, autoMACS Columns make the difference. To increase purity or recovery, specialized programs on the autoMACS NEO Separator ensure your experiment's success. Unlike column-free methods, our column-based technology ensures complete control over your results.





## Less labeling, more freedom

The autoMACS Column is the beating heart of the autoMACS NEO Separator. With unlimited choice of starting material and compatibility with all MACS Isolation Kits and MACS MicroBeads, it allows for minimal labeling of target cells for efficient isolation.

## Extended column capacity

Process larger numbers and volumes of samples with the autoMACS NEO Separator. The integrated stage loading function automatically aliquots a sample to allow for optimum use of the column's capacity. This saves buffer, reduces column costs, and avoids plastic waste.

## Optimized programs

Make the most of your sample with separation programs tailored to your goal. The autoMACS NEO Separator offers different separation programs individually optimized for each reagent and downstream application.

# What makes the perfect cell separation instrument?

## Large monitor and intelligent software

10.1" adjustable touchscreen for glove-sensitive operation of the intuitive software.

## Robotic needle arm

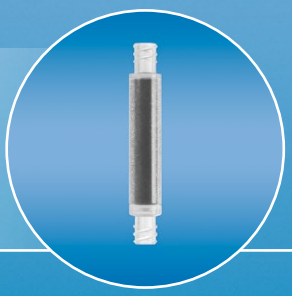
Standardized pipetting for automated sample labeling, mixing, and column loading.

## Monitoring of the instrument

Sensors constantly monitor the exact status of the autoMACS NEO Separator, buffer levels, and column status.

## Reusable autoMACS Columns

Columns can be used repeatedly for up to 14 days and due to sophisticated fluidics are suited for all cell isolation strategies and starting materials.



## MACS Chill Racks

Maintain the integrity of your valuable samples by keeping your cells at 4 °C or room temperature.

## MACS Reagent Rack 8

Up to eight reagents can be placed for autolabeling on the Reagent Rack. Lot numbers and expiration dates are automatically tracked by scanning the reagent vial barcode.


Miltenyi Biotec
Chill 50 Rack
Chill 5 Rack
Rack 8
MACS® MiniSampler S
Chill 15 Rack
auto
MACS NEO


Save
hands-on time

Keep samples
and users safe

Gain
flexibility

# Accessories to bring success in the lab


**Figure 3:** The full setup of the autoMACS NEO Separator.

Your labwork and results don't have to suffer because of a busy schedule. Automating your cell separations will free up your time for everything else you need to do.

## Keep your samples at the right temperature for optimal performance

The autoMACS NEO Separator comes with three Chill Racks. The Chill Racks ensure that your samples maintain a temperature of 4 °C throughout the labeling and separation process. You can process up to six samples in a single run in a flexible manner. MACS Chill Racks are available for 50, 15, or 5 mL tube sizes.


**Figure 4:** MACS Chill Rack can maintain the temperature of the samples at 4 °C.

## Label and separate multiple cell types in any run automatically

Take advantage of the newly designed MACS Reagent Rack 8. It is possible to place eight reagent vials for any experiment, making it possible to perform autolabeling of multiple samples and markers in one run. Track lot numbers and expiration dates of reagents automatically by scanning the reagent vial barcode.


**Figure 5:** MACS Reagent Rack 8 makes it possible to separate different cell types within multiple samples in one run.

## Small footprint for safe and sterile handling

Need to separate samples in a sterile manner? This is possible thanks to our laminar hood plate and the small footprint of the autoMACS NEO Separator. The autoMACS Laminar Hood Plate has been developed for stable placement of the instrument on any surface.

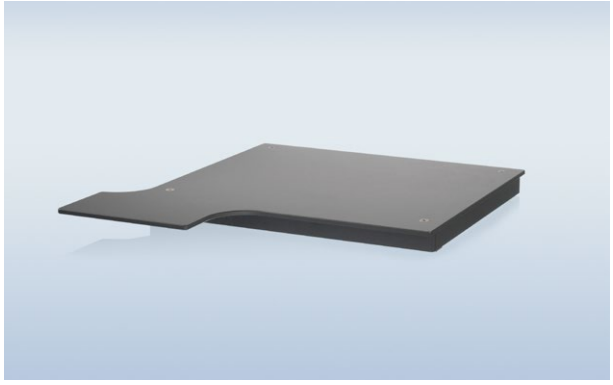


**Figure 6:** The laminar hood plate is used to ensure the stability of the autoMACS NEO Separator.

# Software that simplifies

The intuitive and intelligent autoMACS NEO software simplifies your lab day to get the most out of your samples, all in a day's work. With a few taps on the screen, you will have access to experiment history, planners, and more.

## Experiment planner

Define your experiments quickly with default settings and programs optimized for each reagent to isolate your target cells with the highest purity, recovery, or speed – depending on your needs and downstream applications. You can also choose from specialized programs for further fine-tuning. The integrated experiment scheduler manages labeling and separation of your samples in a time-efficient way.

## User management

Ideal for a multi-user lab, user logins allow for controlled access to the instrument with customizable rights and permissions, which promotes transparency of actions and security of data and the instrument itself. Individual users can create experiment templates, save their favorite reagents, and access their complete experiment history.

## Task planner

Organize the lab day schedule with the integrated calendar. Get an immediate overview of free experiment time slots and make reservations to ensure the instrument is free when you need it. Easily schedule recurrent maintenance, such as wake-up and shutdown, to increase efficiency and to save precious time.

## Experiment monitoring

Use your time wisely by knowing exactly when your samples will be ready. The progress bar shows you which sample is being treated and the time left in an experiment. Sensors constantly monitor the status of the instrument, buffer levels, and column. This ensures optimal instrument performance for every single run.

## Run report

Don't spend your time with paperwork – focus on your next breakthrough. Export your experiment setup, results, and instrument status at any time to support your documentation.


Reagents
Experiments
Tools
2023-Feb-01 08:11:14
Experiment planner
Experiment list
Reagent Rack 8
PanTBACh
PanTMBCh
Sample process
Clear
Sample
multiple
Reagent
Pan T Cell Isolation Kit, h
Labeling
auto
Program
PTCIKh Recovery
Sample volume
200µL
Wash
Rinse
Incubation
0 min
miltenyibiotec.com

# Fine-tune cell populations for your assays

Whatever you need your cells for, the ability to control the purity, recovery, and speed of your cell separation is a windfall for any experiment.

The autoMACS NEO Separator offers numerous programs with varying flow rates through one or two columns to give you maximal flexibility of your separation results. For each reagent, specific optimized programs for high purity or high recovery are recommended, so you can fine tune your target cell populations to precisely fit your research needs.

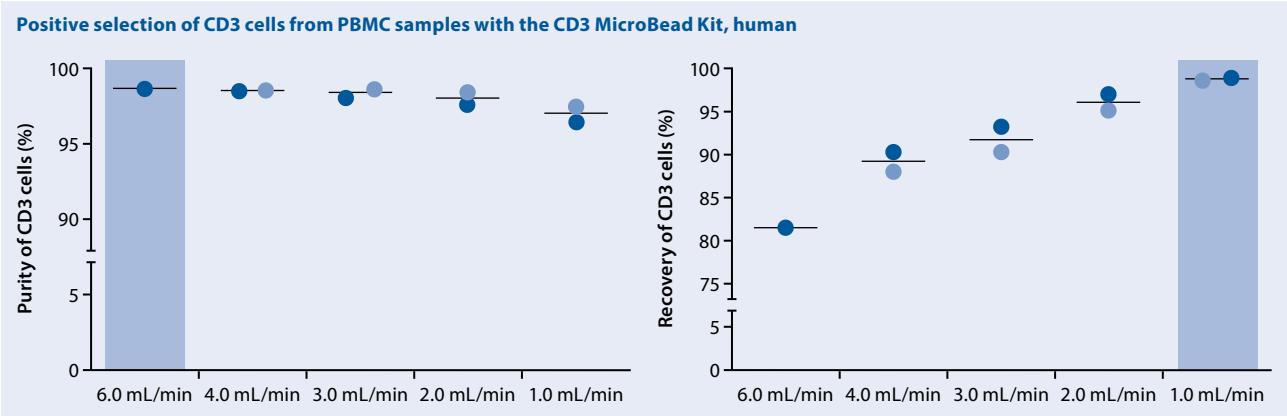



**Figure 7:** In this example of a positive selection of CD3 cells, a faster flow rate results in a higher purity. Alternatively, decreasing the flow rate increases the recovery of the sample, allowing weakly labeled cells to be successfully eluted in the target cell fraction.

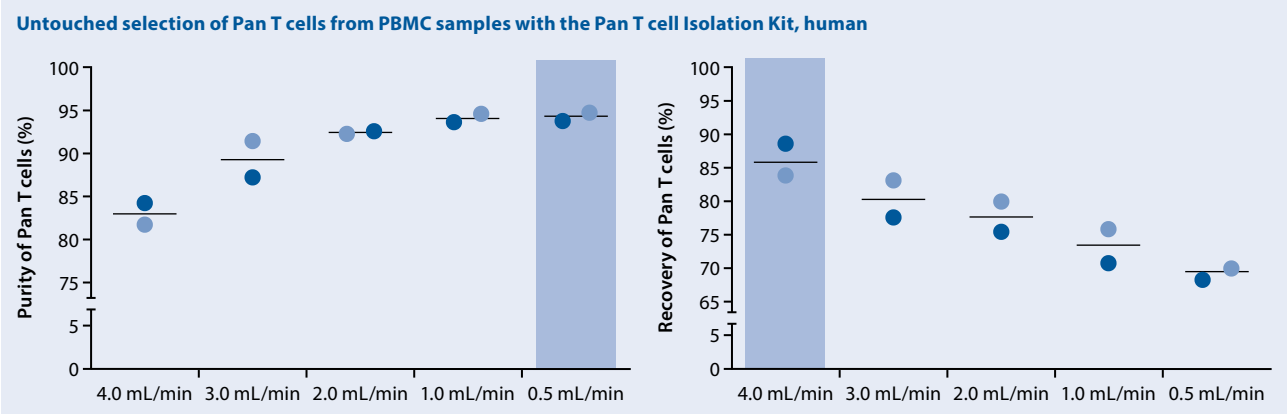



**Figure 8:** For this example of an untouched isolation of Pan T cells, a slower sample uptake increases the target cell purity, whereas a faster sample uptake increases the recovery of target cells.

# Application highlight

## Optimal separation of target cells from diagnostic samples

Automated isolation of B cells directly from anticoagulated whole blood samples is highly beneficial for many diagnostic laboratories. Analysis of B cells in leukemia patients is one of the most important fields of application.

Small numbers of malignant cells that remain during treatment or that come back after treatment of hematological diseases are called minimal/measurable residual disease (MRD). It is the major cause of relapse in patients with leukemia, lymphoma, or other hematological diseases. Current techniques do not allow for a distinction between malignant and normal B cells, and it is a challenge to detect the small number of cancer cells between all other cells. Enrichment of target cells makes a significant difference in the sensitivity of detection of malignant cells for downstream assays like next generation sequencing or flow cytometry.

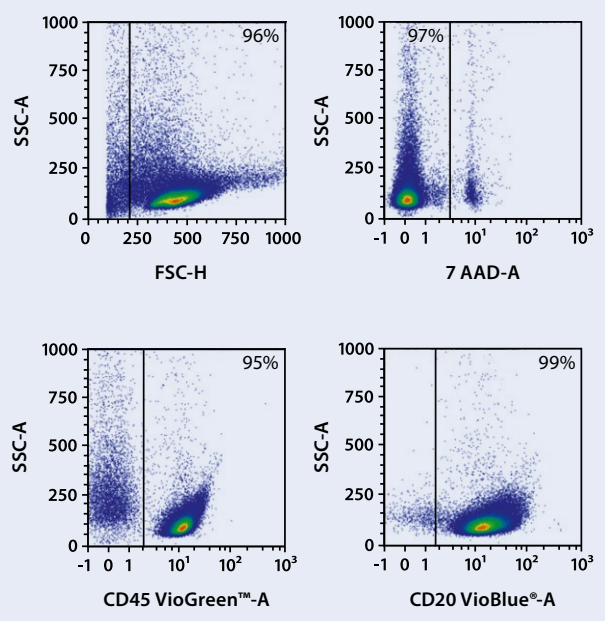



**Figure 9:** Enrichment of B cells from routine diagnostic samples

> Especially in our routine laboratory, it is important that the results are precise and meaningful. With an ever increasing number of samples, the autoMACS NEO Separator is the perfect instrument to facilitate our daily laboratory routine. The ease of use in particular makes it possible for everyone in the lab to use the instrument. We appreciate the performance of the autoMACS NEO, which allows us to target even small cell populations and generate sensitive downstream results.

**Tatevik Grigoryan**
**Research Assistant**
**Labor für Haematologie**
**Mannheim (HaeMa), Germany**

# Protect your instrument

## Technical support

At Miltenyi Biotec, customer success is our highest priority. With over a hundred technical experts globally, we take pride in offering exceptional product and scientific support.

Visit www.miltenyibiotec.com/support to experience expert technical assistance:

- Live chat for technical and product discussions
- Comprehensive list of frequently asked questions
- Library of data sheets and special protocols

## A service contract which fits your needs

Benefit from excellent instrument performance and safety of your samples with a comprehensive service contract from Miltenyi Biotec. Our service contracts are an easy way to optimize your instrument-uptime and ensure compliance with regulatory requirements. Choose the appropriate level of support to fit your needs and budget.

Choose from the service agreements designed to fit your lab.

- Reduce costs by avoiding instrument downtime or sample loss
- Ensure you produce highly reproducible results
- Be assured that experienced technical support is only a phone call away

| | Essential Service | Essential Service High Throughput |
|---|---|---|
| **Maintenance** | | |
| Regular preventive maintenance (PM) | 1 per year | 2 per year |
| Replacement of wearing parts | ● | ● |
| Software Updates | ● | ● |
| Labor and travel expenses | ● | ● |
| **Repair Service** | | |
| Unlimited number of repairs | ● | ● |
| All spare parts included | ● | ● |
| Response time | 48 h | 48 h |
| Discount on spare parts | spare parts Included | spare parts Included |
| Labor and travel expenses | ● | ● |
| **Additional service** | | |
| Technical support services | ● | ● |
| Remote Support Service | ● | ● |

## autoMACS NEO Specifications

### Footprint and dimensions

| | |
|---|---|
| Monitor | 10.1" LCD touchscreen |
| Footprint (w × d)<br>Footprint with MiniSampler S (w × d) | 387 mm × 289 mm (15.2" × 11.4")<br>438 mm × 454 mm (17.2" × 17.9") |
| Dimensions (w × d)<br>Dimensions with MiniSampler S (w × d)<br>Dimensions with all covers open (w × d)<br>Dimensions with accessory with all covers open (w × d) | 605 mm × 384 mm (23.8" × 15.1")<br>633 mm × 491 mm (24.9" × 19.3")<br>819 mm × 610 mm (32.2" × 24.0")<br>824 mm × 610 mm (32.4" × 24.0") |
| Height | 395 mm–500 mm (15.6"–19.7") (adjustable touchscreen) |
| Weight | 31 kg |

### Fluidics

| | |
|---|---|
| Pipetting volume range | 0.02–50 mL |
| Uptake flow rate | 0.25–8 mL/min |
| Liquids | autoMACS Running Buffer – MACS Separation Buffer<br>autoMACS Washing Solution<br>Storage solution (70% Ethanol)<br>Bleach solution (1% Sodium hypochlorite solution) |

### Technical specifications

| | |
|---|---|
| Working temperature | 15–30 °C |
| Storage temperature | Room temperature |
| Humidity | 20% to 80% relative humidity, noncondensing |
| Altitude max. | 2000 m |
| Emission sound pressure level at workstation | <70 dB(A) |
| USB ports | 2 × USB 2.0 ports (rear panel)<br>2 × USB 3.0 ports (display) |
| RAM | 4 GB |
| Mass storage | SSD, 64 GB |
| Input voltage | 100–240 V~, 50/60 Hz |
| Maximum power consumption | 200 W |
| Average power consumption | 50 W |
| Fuses | 2 × T4A, 250 V |

# Ordering information

| autoMACS NEO Separator – Starter Kit | Description | Order no. |
|---|---|---|
| • autoMACS NEO Separator<br>• MACS Reagent Rack 8<br>• MACS Chill 5, 15, 50 Rack Set<br>• 5×2 autoMACS Columns<br>• 2 column substitutes<br>• autoMACS NEO Buffer Combination<br>• Short instructions<br>• One-year warranty<br>• autoMACS NEO user manual<br>• Power Cord | | 130-120-327 |
| MACS MiniSampler S and user manual | Sample stage allowing for automated processing of multiple samples, compatible with all MACS Chill Racks | 130-123-093 |

| Accessory | Description | Order no. |
|---|---|---|
| MACS Chill 5 Rack | Chill Rack for 5 mL tubes | 130-092-951 |
| MACS Chill 5 Rack, Box of 3 | Three Chill 5 Racks for 5 mL tubes | 130-097-041 |
| MACS Chill 15 Rack | Chill Rack for 5 and 15 mL tubes | 130-092-952 |
| MACS Chill 15 Rack, Box of 3 | Three Chill 15 Racks for 5 and 15 mL tubes | 130-097-036 |
| MACS Chill 50 Rack | Chill Rack for 5, 15 and 50 mL tubes | 130-092-953 |
| MACS Chill 50 Rack, Box of 3 | Three Chill 50 Racks for 5, 15 and 50 mL tubes | 130-097-037 |
| MACS Chill 5, 15, 50 Rack Set | Set of three Chill Racks | 130-097-038 |
| autoMACS Laminar Hood Plate | Metal plate for operating the autoMACS Separator in a laminar flow hood | 130-093-246 |
| autoMACS Protection Cover | Protection foil for long-term storage of the autoMACS Separator | 130-093-532 |
| autoMACS Columns | Columns specifically designed for use with the autoMACS Separator | 130-021-101 |


Miltenyi Biotec
Chill 5 Rack
Rack 8
MACS® MiniSampler S
auto
MACS NEO

# Miltenyi Biotec – a company supporting your complete workflow

Miltenyi Biotec offers a complete portfolio of research tools that enables a stream-lined workflow, from reproducible sample preparation to a variety of downstream applications. MACS Solutions are the perfect companion for every step of your inspired research.

## MACS Sample Preparation

The secret to the success of any experiment depends on the quality of the starting material. Our sample preparation portfolio has the tools you need to start smart. Our innovate instruments and reagents help you standardize your tissue preparations and get reproducible data.

## MACS Cell Separation

Whether isolating cells in small-scale experiments or in high-throughput industrial settings – we offer manual, semi-automated, automated, and robotic integration solutions to meet your specific research demands.

## MACS Antibodies

Miltenyi Biotec offers a huge range of fully validated antibodies suitable for multiple applications, such as flow cytometry, microscopy, and functional assays. The MACS Antibody Portfolio guarantees high performance consistency with innovative and proprietary recombinant antibody technology.

## MACS Flow Cytometer

MACS Flow Cytometry provides best-in-class solutions for all your research needs. Instruments, reagents, kits, and software constitute a comprehensive portfolio to keep your finger on the pulse of advanced flow cytometry, cell sorting and cell analysis.

## MACS Imaging and Microscopy

Our growing MACS Imaging and Microscopy portfolio offers versatile, high-quality imaging solutions to study complex biological systems.

## MACS Cell culture and Stimulation

Our MACS Cell Culture and Stimulation portfolio comprises a specialized and versatile range of cell culture media and reagents for cell stimulation, expansion, and/or differentiation.

## MACS Molecular Analysis

MACS Technology has been perfectly adapted for molecular applications for fast and sensitive analysis of cells at any subcellular level. Explore our products for high-yield mRNA, protein, and organelle isolation, cDNA synthesis, and stable cellular transfection.

auto MACS NEO

# Support at your fingertips

### autoMACS Live Support

- 24/5 Live support at your fingertips
- Have your questions answered in real time by one of our experts in the chat

### Application and instrument support

Technical and field application support for assay design and product advice

### Local sales representative

Get support and information about our latest product releases from your local sales representative

### Service

- Comprehensive service options
- Globally distributed field service teams

# Visit our webpage to explore the entire MACS Cell Separation portfolio and resources

- Webinars
- Videos
- Protocols and workflows
- Application notes
- Posters
- and more …

▶ **miltenyibiotec.com/cellseparation**

# ▶ miltenyibiotec.com/automacsNEO

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