



Miltenyi Biotec

# autoMACS<sup>®</sup> 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.





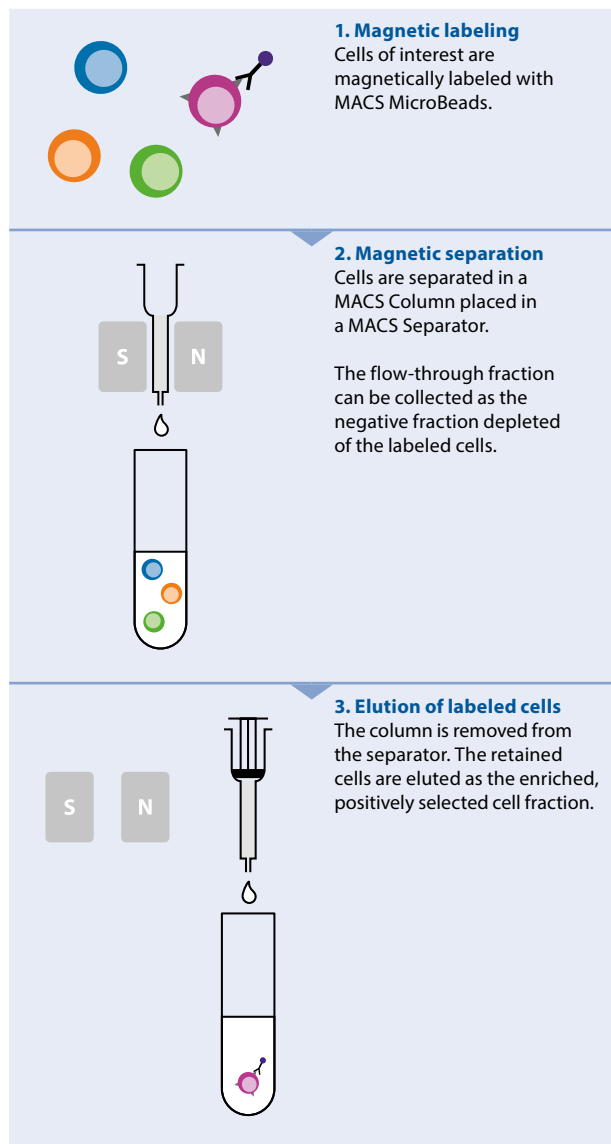
## Contents

- 4** MACS® Technology for outstanding cell separation
- 4** Reagents that fit your needs
- 6** autoMACS Columns make all the difference
- 8** What makes the perfect cell separation instrument?
- 11** Accessories to bring success in the lab
- 12** Software that simplifies
- 14** Fine-tune cell populations for your assays
- 15** Application highlight
- 16** Protect your instrument
- 18** Ordering information
- 20** Miltenyi Biotec – a company supporting your complete workflow

# MACS Technology for outstanding cell separation

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

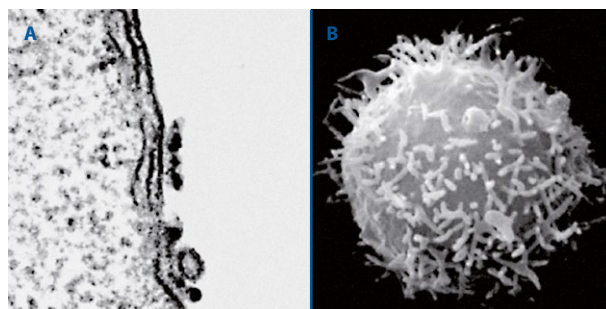
MACS Technology enables the magnetic separation of cell populations by targeting surface antigens with specific antibodies conjugated to superparamagnetic beads. Labeled cells are magnetically retained in a separation column, from which they can be eluted. The fast and gentle isolation minimizes cellular 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 Autolabeling: 0.03 mL – 39.5 mL
Whole blood, bone marrow, and buffy coat	Manual labeling: 0.4 mL – 26.7 mL Autolabeling: 0.25 mL – 28 mL

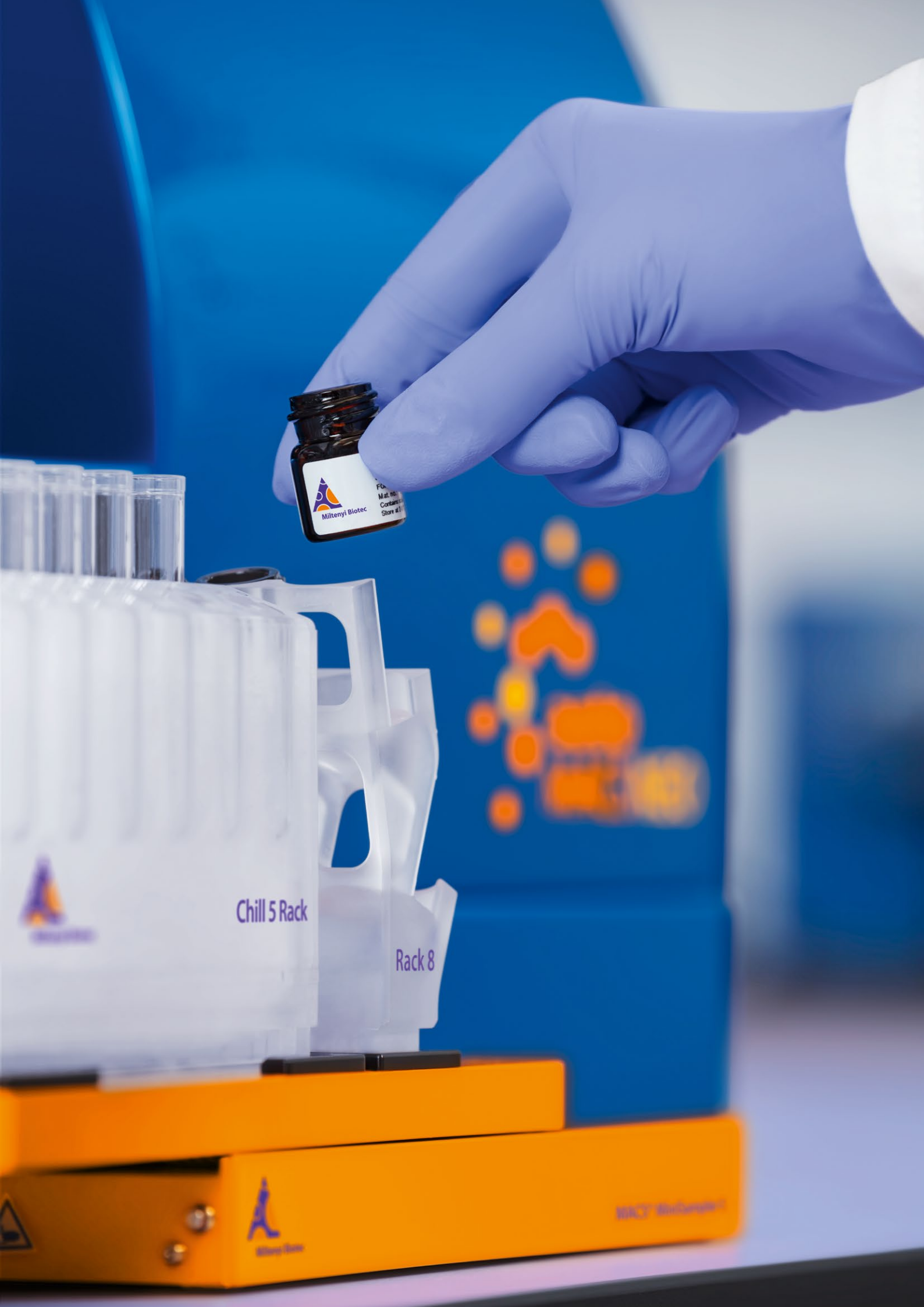
**Table 1:** autoMACS NEO processing volumes.

LEARN MORE



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

► [miltenyibiotec.com/NEOreagents](https://miltenyibiotec.com/NEOreagents)



Mitenyi Biotec  
F...  
Mat. No.  
Contain...  
Store at...

Chill 5 Rack

Rack 8

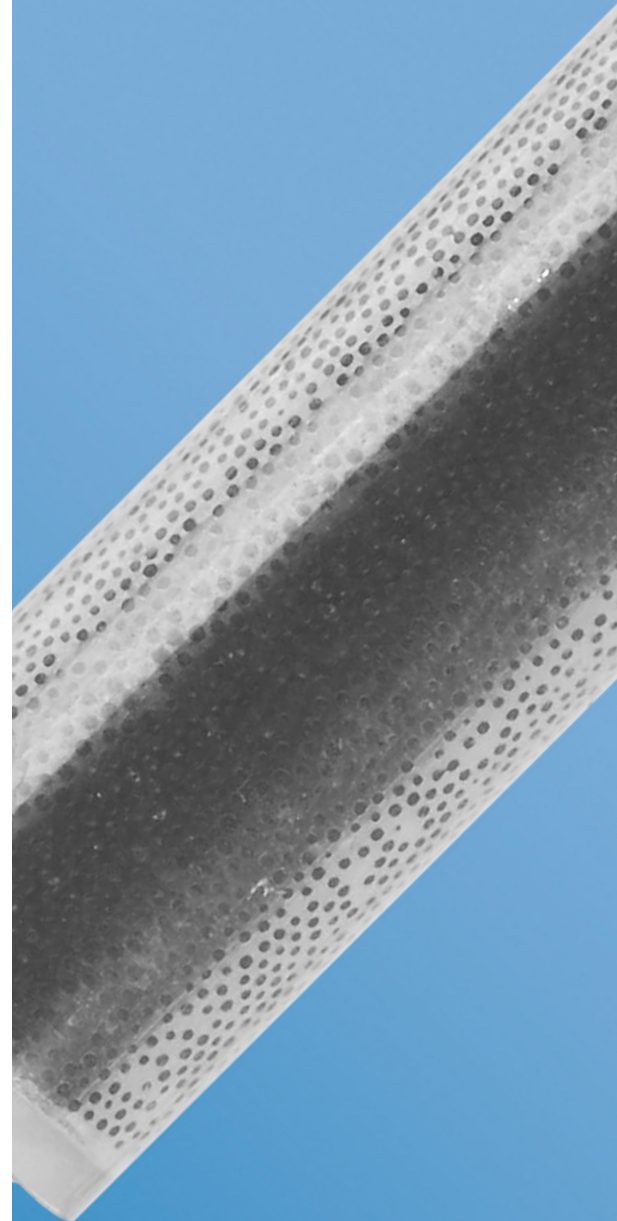
Mitenyi Biotec

MKC7 MultiSample

# 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.



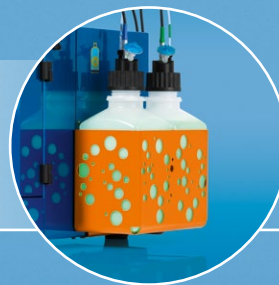
## Robotic needle arm

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.







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

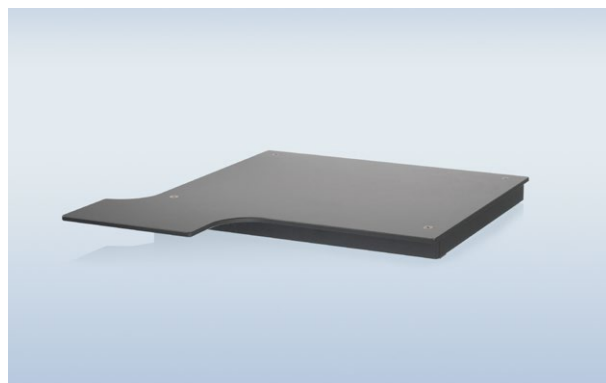
Take advantage of the newly designed MACS Reagent Rack 8. It is possible to place eight reagent vials for any experiment, making it possible to perform autolabeling of multiple samples and markers in one run. Track lot numbers and expiration dates of reagents automatically by scanning the reagent vial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





AutoMACS NEO

Reagents Experiments Tools

? 2023-Feb-01 08:11:14

Sample rack - 2023-02-01\_Laura\_0810

2	3	4	5	6
1				
2				
3				
4				

Reagent Rack 8

- 1 PanTBACH
- 2 PanTMBCh
- 3
- 4
- 5
- 6
- 7
- 8

Experiment planner Experiment list

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 +

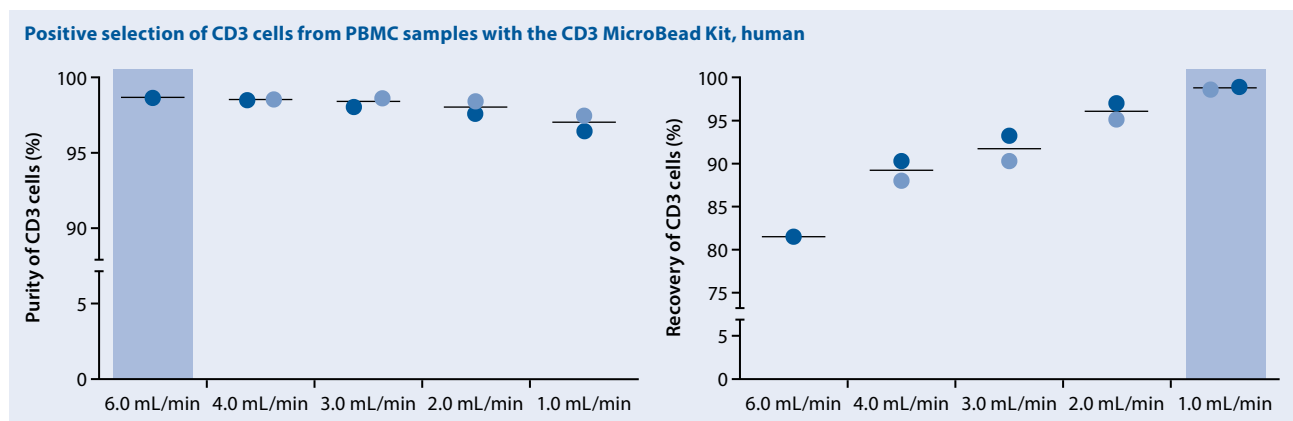
▶ miltenyibiotec.com

# Fine-tune cell populations for your assays

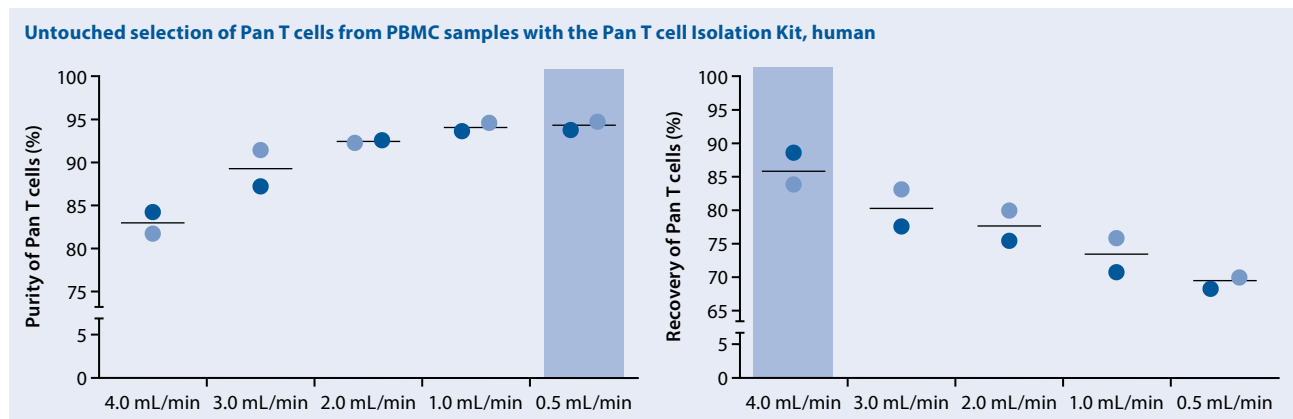
Whatever you need your cells for, the ability to control the purity, recovery, and speed of your cell separation is a windfall for any experiment.

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.

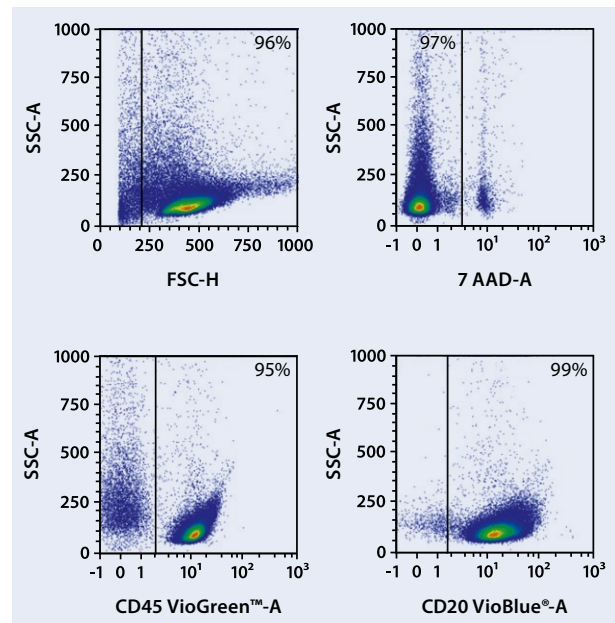


Figure 9: Enrichment of B cells from routine diagnostic samples

“

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](http://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
<b>Maintenance</b>		
Regular preventive maintenance (PM)	1 per year	2 per year
Replacement of wearing parts	●	●
Software Updates	●	●
Labor and travel expenses	●	●
<b>Repair Service</b>		
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	●	●
<b>Additional service</b>		
Technical support services	●	●
Remote Support Service	●	●

## autoMACS NEO Specifications

### Footprint and dimensions

Monitor	10.1" LCD touchscreen
Footprint (w × d)	387 mm × 289 mm (15.2" × 11.4")
Footprint with MiniSampler S (w × d)	438 mm × 454 mm (17.2" × 17.9")
Dimensions (w × d)	605 mm × 384 mm (23.8" × 15.1")
Dimensions with MiniSampler S (w × d)	633 mm × 491 mm (24.9" × 19.3")
Dimensions with all covers open (w × d)	819 mm × 610 mm (32.2" × 24.0")
Dimensions with accessory with all covers open (w × d)	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 autoMACS Washing Solution Storage solution (70% Ethanol) 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) 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.
<ul style="list-style-type: none"> <li>• autoMACS NEO Separator</li> <li>• MACS Reagent Rack 8</li> <li>• MACS Chill 5, 15, 50 Rack Set</li> <li>• 5x2 autoMACS Columns</li> <li>• 2 column substitutes</li> <li>• autoMACS NEO Buffer Combination</li> <li>• Short instructions</li> <li>• One-year warranty</li> <li>• autoMACS NEO user manual</li> <li>• Power Cord</li> </ul>		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

Home Reagents Experiments Tools

MACS ONE Sample Rack: 2023-02-01\_Lamin\_2019

Position	1	2	3	4	5	6	7	8
A	●	●	●	●	●	●	●	●
B	●	●	●	●	●	●	●	●
C	●	●	●	●	●	●	●	●
D	●	●	●	●	●	●	●	●

Reagent Rack 8

Position	1	2	3	4	5	6	7	8
A	●	●	●	●	●	●	●	●
B	●	●	●	●	●	●	●	●
C	●	●	●	●	●	●	●	●
D	●	●	●	●	●	●	●	●

Sample process

Project: Multiple

Project: Plan T Cell Isolation KIL 5

Label: Auto

Medium: PTCs Recovery

Isolation: 200k

Label: Bone

Incubation: 0 min

Standby

auto  
MACS NEO

Chill 5 Rack

Rack 8

MACS® MiniSampler 5

# 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 innovative 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.



#### 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



## Support at your fingertips

#### 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
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