

New

Fully Automated Cell Isolation with
RoboSep™-S



 **STEMCELL™**
TECHNOLOGIES

Table of Contents

- 3 RoboSep™-S
- 4 The RoboSep™-S Advantage
- 5 Case Study: Fully Automated Sequential Cell Isolation of Four Different Cell Types from a Single Sample with RoboSep™
- 6 Research and Applications
- 7 Equipment and Specifications



“We like the reliability of the RoboSep™, the minimization/elimination of specimen handling by the tech during subset separation, and the low maintenance of the instrument. These factors are important to us with such a high throughput of samples processed.”

Wendy Leong, Lab Manager
Pathology/Blood Center Laboratory

Scientists Helping Scientists™

STEMCELL Technologies is a leader in the development of cell separation products, specialty cell culture media and support reagents for life science research. Driven by science, we deliver over 1500 products to more than 70 countries worldwide. To learn more about how STEMCELL Technologies helps to make research work, visit www.stemcell.com.

RoboSep™-S

Fast, Easy and Column-Free Cell Separation

The isolation of viable, functional cells is often a critical first step in successful basic and translational research in many areas, including immunology and stem cell biology, drug discovery and development, and vaccine development.

RoboSep™-S creates a strong foundation for your research by isolating highly purified cells from a wide range of sample sizes and sources including whole blood, leukapheresis samples, peripheral blood mononuclear cells (PBMCs), splenocytes, etc. using the fast, easy, and column-free EasySep™ cell isolation platform by STEMCELL Technologies. Using EasySep™, either cells of interest (positive selection) or unwanted cells (negative selection) are targeted with magnetic particles and separated from non-labeled cells using the powerful EasySep™ magnet. Purified cells of interest are functional and ready for downstream applications, including flow cytometry.

Fully-Automated Immunomagnetic Cell Separation

RoboSep™-S, the updated and improved version of the popular RoboSep™ instrument, offers fully-automated cell separation while retaining the speed and simplicity of EasySep™. A robotic pipetting arm carries out all sample handling steps for up to four different samples in order to minimize sample handling and eliminate cross-contamination. In addition, a simplified user interface allows the unit to run with as little as five minutes of "hands-on" time (Figure 1).



INTERACTIVE PRODUCT TOUR

See RoboSep™-S in Action

www.stemcell.com/RoboSep-S

1



Select protocol. Load sample, EasySep™ reagents, buffer and tips in carousel.

2



Press "Run".

3



Return in 25 to 60 minutes to collect your separated cells.

Figure 1. RoboSep™-S protocol.

The RoboSep™-S Advantage

Versatile and Customizable

- Isolate virtually any cell type from a wide range of sample sources and sizes using negative, positive, or custom protocols.

Simultaneous or Sequential Cell Isolation

- Perform simultaneous cell isolations for up to four samples at once or sequential isolation of different cell types from the same sample.

Minimal Sample Handling with No Cross-Contamination

- Automating sample handling with disposable pipette tips reduces the risk of exposure to dangerous pathogens and eliminates the risk of sample cross-contamination.

Highly Purified, Functional Cells

- Highly purified cells are immediately ready for flow cytometry, functional studies, or other downstream applications.

No Daily Maintenance

- No daily cleaning, washing, or decontamination is required and hydraulic fluid levels are automatically monitored.

Reliable and Consistent Performance

- Cell isolation results are reliable and reproducible, with minimal inter-user variability.

Compact Design

- The small footprint allows multiple units to be placed side-by-side in a biological safety cabinet or on lab benches (Figure 2).

Quick Start Options and User-Friendly Interface

- Start a separation protocol in just five minutes with minimal touchscreen navigation using pre-programmed user profiles containing commonly run protocols.

Simple Reagent and Experiment Tracking

- Integrated barcode reader and End-of-Run reports track user, reagent, and protocol details.

Superior Support

- Our Technical Support experts can quickly access diagnostic packages and video logs to assist with troubleshooting and comprehensive instrument service packages can minimize unplanned downtime.



Figure 2. The compact design of the RoboSep™-S allows multiple units to be placed side-by-side in a biological safety cabinet.

Case Study

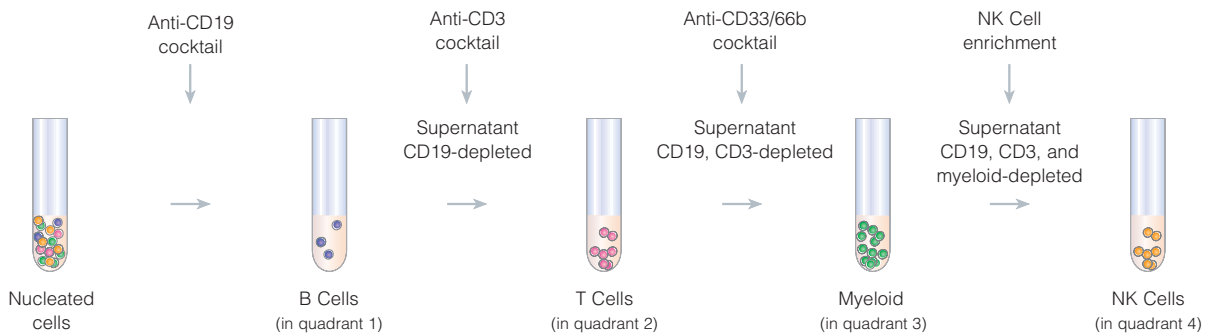
Fully Automated Sequential Cell Isolation of Four Different Cell Types from a Single Sample with RoboSep™

Florida Hospital Tissue Typing Laboratory, Orlando, Florida

Background

Many analyses, such as chimerism testing, are often performed on small blood samples (e.g. pediatric samples). As a result, analysis of purified cell subsets requires techniques that can isolate more than one cell type from an undivided starting sample. Here we describe a method used by the Florida Tissue Typing Laboratory to sequentially isolate B cells, T cells, myeloid cells, and NK cells starting from a single sample of HetaSep™-treated blood for their chimerism analysis.

Methods



Fully Automated Sequential Separation with RoboSep™

Figure 3. Automated sequential separation of B cells, T cells, myeloid cells, and NK cells from a single sample of HetaSep™-treated blood.

Results

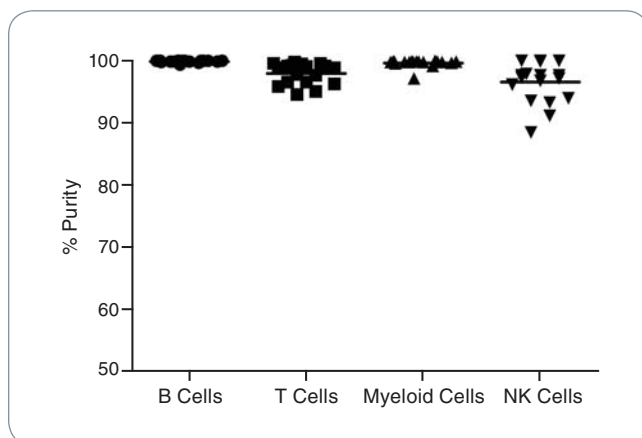


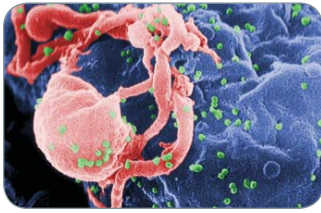
Figure 4. Purity of four different cell types isolated from 18 different samples using RoboSep™ sequential separation.

Data kindly provided by Max Marschner, Supervisor, Florida Hospital Tissue Typing Lab.

Advantages of using RoboSep™ for sequential isolation of immune cells

- Up to four cell types can be isolated sequentially from a single sample.
- All isolations are performed during a single machine cycle with minimal “hands-on” time.
- No cross-contamination occurs during enrichment as different filter tips are used to isolate each cell type.
- High cell purity and viability (>95%) with excellent recovery of desired cells can be achieved.
- Small volumes of blood (0.5 - 4.5 mL) yield sufficient cells to run DNA analysis or other downstream applications.

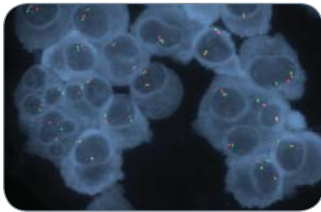
Research and Applications



Immunology and Infectious Disease Research

RoboSep™ minimizes the risk associated with handling hazardous biological specimens and has been used to study:

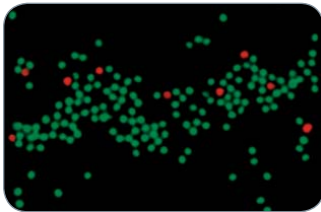
- Pathogens including HIV, other viruses and bacteria¹⁻⁴
- Autoimmune diseases including diabetes and rheumatoid arthritis^{5,6}
- Transplantation immunology⁷⁻⁹
- Cancer^{10,11}



Hematological Malignancies

RoboSep™ effectively enriches rare cell types to enhance assay sensitivity for research on:

- Multiple Myeloma^{12-14,23}
- Chronic Lymphocytic Leukemia¹⁵⁻¹⁷
- Acute Myeloid Leukemia¹⁸
- Myelodysplastic Syndrome^{19,20}



Chimerism and HLA Testing

RoboSep™ facilitates simultaneous or sequential cell isolation with reliable and reproducible results for:

- Chimerism analysis^{21,22}
- Flow Cytometry Crossmatch (FCXM)
- Serology-based assays



Assay Development and Immunotherapy Research

RoboSep™ has been used to isolate highly purified, functional cells for:

- Drug discovery and development^{6,23-25}
- Immune cell-based assay development
- Vaccine development¹³
- Basic cellular therapy research²⁶

Selected RoboSep™ References

1. Miles B et al. *J Leuk Biol* 94(2):281-289, 2013
2. Cohen S et al. *JAMA* 309(7):699-705, 2013
3. Sáez-Ciri3n A et al. *Nat Protoc* 5:1033-1041, 2010
4. Chun TW et al. *AIDS* 24(18):2803-2808, 2010
5. Montandon R et al. *PNAS* 110(24):E2199-2208, 2013
6. Durand CA et al. *Autoimmunity* 46(1):62-73, 2013
7. Haniffa M et al. *J Exp Med* 206(2):371-385, 2009
8. Kirkiles-Smith NC et al. *Transplantation* 87(2):189-197, 2009
9. S3ndergaard H et al. *Clin Exp Immunol* 172(2):300-310, 2013
10. Wilcox RA et al. *Blood* 114(14):2936-2944, 2009
11. Olkhanud PB et al. *Cancer Res* 71:3505-3515, 2011
12. Shetty S et al. *Int J Hematol* 95:274-281, 2012
13. Bae J et al. *Clin Cancer Res* 18(17):4850-4860, 2012
14. Bacher U et al. *Cancer Genet Cytogenet* 203(2):169-175, 2010
15. Amin S et al. *J Cell Mol Med* 16(9):2074-2084, 2012
16. Morabito F et al. *Br J Haematol* 146(1):44-53, 2009
17. Bodogai M et al. *Cancer Res* 73(7):2127-2138, 2013
18. Treppendahl MB et al. *Blood* 119:206-216, 2012
19. Makishima H et al. *Leuk Res* 34(4):447-453, 2010
20. Sugimoto Y et al. *J Hematol Oncol* 5:4, 2012
21. Decot V et al. *Biomed Mater Eng* 18(1 Suppl):S19-26, 2008
22. Hanson V et al. *Tissue Antigens* 82(4):269-275, 2013
23. Misund K et al. *J Biomol Screen* 18(6):637-646, 2013
24. Vitale LA et al. *Clin Cancer Res* 18(14):3812-3821, 2012
25. Zhou Q et al. *Clin Exp Immunology* 173(1):131-139, 2013
26. Pahwa R et al. *J Immunol Methods* 363(1):67-79, 2010

Equipment and Specifications

System is Supplied With:

- 4 “The Big Easy” EasySep™ Magnets
- RoboSep™ Service Rack
- RoboSep™ Tube Kit
- USB Flash Drive
- Technical Manual
- Quick Start Guide
- 1-Year Warranty

Technical Specifications:

DIMENSIONS

- Height with removable lid: 52.2 cm (20.5")
- Width: 42 cm (16.5")
- Depth: 42 cm (16.5")
- Weight: 22 kg (48.5 lb)

POWER REQUIREMENTS

- 100 - 240 V~, 65W, 50/60 Hz, 1.6 A
- 2 x Fuses: 250 V~, 1.6 A Fast Blow

CONNECTIONS

- 3 USB ports
- RJ-45 10/100 Ethernet port

CONDITIONS FOR OPERATION

- Temperature: 10 - 30°C (50 - 86°F). RoboSep™-S is not specified for use in a cold room (4°C, 39°F)
- Humidity 20 - 85% (non-condensing)

Capacity:

Sample volume ranges from 250 µL to 8.5 mL per sample.

Positive selection protocols process up to 8×10^9 total cells (4 samples of up to 2×10^9 cells each). Negative selection protocols process up to 4×10^9 total cells (4 samples of up to 1×10^9 cells each). *Negative and positive selections can be executed simultaneously.*

RoboSep™-S & Accessories

PRODUCT	CATALOG #
RoboSep™-S	21000
RoboSep™-S Double Package	21002
RoboSep™-S Triple Package	21003
RoboSep™ Service Rack	20101
RoboSep™ Buffer ¹ (250 mL)	20104
RoboSep™ Buffer 5X Concentrate (250 mL)	20124
RoboSep™ Filter Tip Racks ¹ (1 box of 8 racks)	20125
RoboSep™ Tip Head Polishing Compound (7 mL)	20119

1. RoboSep™ Buffer and 1 - 2 boxes of RoboSep™ Filter Tip Racks are included with every purchase of a RoboSep™ Reagent Kit.

Service Options

PRODUCT	CATALOG #
1-Year Warranty	21200
Preventative Maintenance Visit (for an Instrument without a Warranty)	21203
1-Year Warranty with 1 Preventative Maintenance Visit	21202
Additional Preventative Maintenance Visit (for an Instrument on an active Warranty)	21209

Our commitment to your research does not end when you purchase our products. STEMCELL Technologies' Technical Support experts and comprehensive RoboSep™-S service packages offer top quality support and maintenance, freeing you to focus on your science. Please visit www.stemcell.com/RoboSep-S to learn more.

Scientists Helping Scientists™ | WWW.STEMCELL.COM

TOLL-FREE PHONE 1 800 667 0322 • PHONE 1 604 877 0713
TECHSUPPORT@STEMCELL.COM • INFO@STEMCELL.COM

FOR FULL CONTACT DETAILS WORLDWIDE VISIT OUR WEBSITE

STEMCELL TECHNOLOGIES INC.'S QUALITY MANAGEMENT SYSTEM IS CERTIFIED TO ISO 13485 MEDICAL DEVICE STANDARDS.
FOR RESEARCH USE ONLY. NOT INTENDED FOR HUMAN OR ANIMAL DIAGNOSTIC OR THERAPEUTIC USES.
DOCUMENT #28060 VERSION 1.0.0 OCTOBER 2013

