Miltenyi Biotec

MACS® Mouse Cell Separation

Elevate your research



MACS Technology

One portfolio for all your mouse cell isolation needs

The fast and gentle cell isolation method of MACS Technology allows you to isolate viable and functional cells. Our unique combination of nano-sized MACS MicroBeads and specialized MACS Columns enables gentle cell isolation with minimal labeling. This technology revolves around specialized columns featuring cell friendly spheres. When the MACS Column is placed in a magnetic field, such as a MACS Separator, an even magnetic force is amplified throughout the spheres. The space between the spheres is about 20 times the size of lymphocytes, and the strong magnetic field allows the labeled cells to be gently cradled within the column.

Isolate virtually any cell type with the broad range of options available in the MACS Technology Portfolio. Select the cell isolation method that works best for your cells and your specific requirements. With MACS Technology, you have the power to select the best.





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▸ **miltenyibiotec.com**

Mouse tissue-specific enzyme kits for gentleMACS™ Technology

Optimized dissociation of virtually any mouse tissue into single-cell suspensions

Streamline your workflow and free up your schedule with gentleMACS Technology. This innovative system enables fully automated tissue dissociation with a unique the combination of enzymatic digestion and mechanical disruption that minimizes the enzyme activity and shearing forces required. As a result, gentleMACS Technology is the most gentle and convenient method to reliably generate single-cell suspensions with high viability and preserved surface epitopes.

With a wide range of tissue-specific enzyme kits and validated protocols, the reliable dissociation of virtually any mouse tissue becomes effortless. Even isolating difficult cell types, such as hepatocytes and cardiomyocytes, is simplified with gentleMACS Perfusion technology. Traditionally, these large, fragile cells require manual perfusion of the organ with digestion enzymes—a process that demands extensive training, steady hands, and significant experience. However, the automated perfusion technology on the gentleMACS Platform makes mouse heart and liver perfusion accessible to anyone with minimal training.

Mouse tissues:

- Tumor
- Neonatal brain (<P7)
- Adult brain (>P7)
- Adult heart
- Neurospheres
- Lamina propria (colon)
- Lung
- Spleen
- Kidney
- Neonatal heart
- Liver
- Skeletal muscle
- Epidermis
- Adipose tissue
- Prostate
- Embryoid bodies

VISIT

Scan the QR code to learn more about MACS Sample Preparation innovative solutions for your tissue preparation.

▸ **bit.ly/3xrQOOC**



Effective removal of dead cells and debris

Increase the recovery rate for single-cell analysis with this ready-to-use density gradient reagent

The Dead Cell Removal Kit quickly and efficiently removes dead cells and debris when working with robust cell types such as epithelial, tumor, and immune cells (fig. 1). This 25 minute workflow improves cell culture, reduces flow sorting time, and increases the recovery rate for single-cell sequencing.

A ready-to-use density gradient reagent, the Debris Removal Solution allows for the fast removal of debris in cell suspensions containing fragile cells from brain, heart, liver, and kidney, while applying full acceleration and full brake during centrifugation (fig. 2).

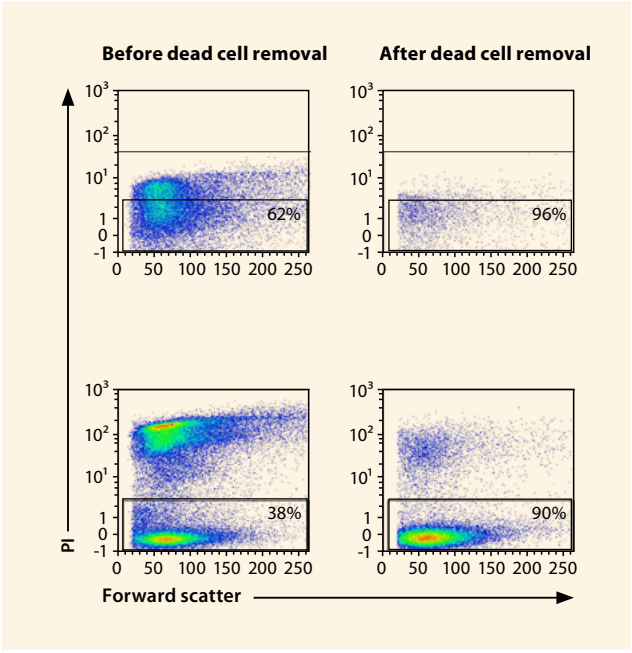


Figure 1: PBMCs were subjected to heat shock induced-cell death for two different time spans – upper panel short time span, lower panel long time span. Subsequently, dead cells were removed using the Dead Cell Removal Kit according to the manufacturer's data sheet. For flow analysis, dead cells were stained using propidium iodide.

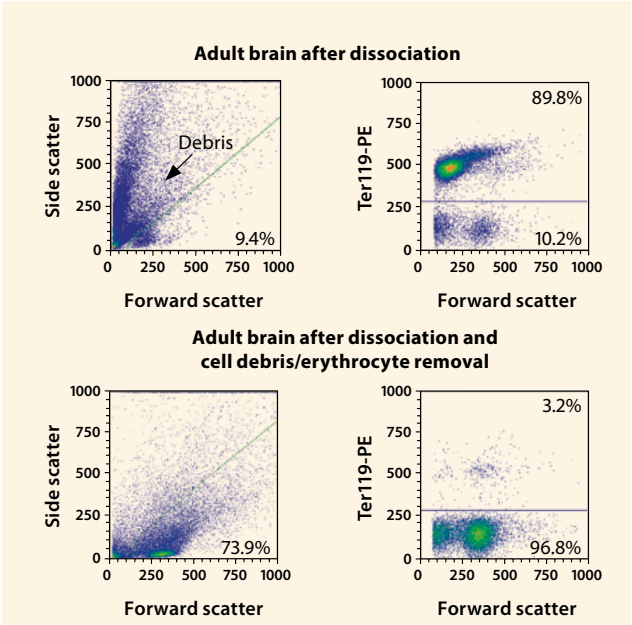


Figure 2: Adult mouse brain was dissociated using the Adult Brain Dissociation Kit, mouse in combination with the gentleMACS Octo Dissociator with Heaters. Subsequently, red blood cells were depleted using the Red Blood Cell Lysis Solution, before removing debris using the Debris Removal Solution. Red blood cells were stained with anti-Ter119-PE. Cells were analyzed by flow cytometry using the MACSQuant Analyzer based on scatter signals to demonstrate absence of debris after debris removal.





VIDEO

Scan the QR code to see a fun video of MACS SmartStrainers.

▸ **bit.ly/3S2ViCt**


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Speed up your research with MACS Mouse MicroBeads

Isolating murine cells? Meet your specific research goals with high-quality and time-saving MACS Mouse Cell Separation Techniques. Simply follow these three steps to isolate murine cells efficiently and effectively (fig. 3):

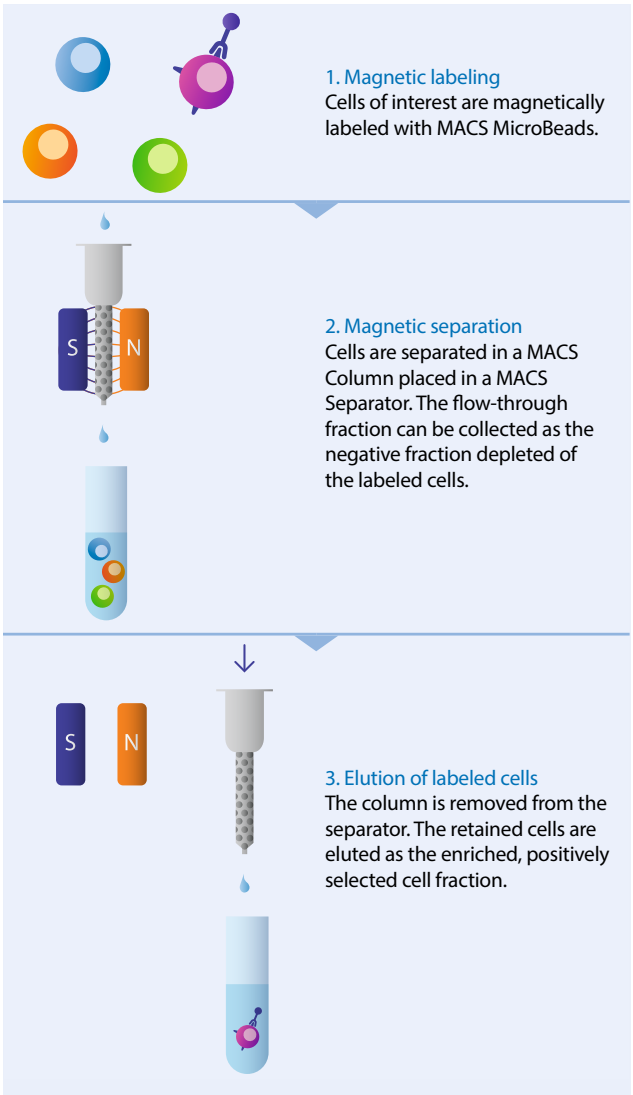


Figure 3: It only takes three easy steps to get viable cells with high yield and purity from your sample.

VIDEO

Watch how to isolate cell in three easy steps.

▸ **bit.ly/4b0KdIA**

Cell isolation strategies for MACS Mouse MicroBeads

The diverse MACS Technology Portfolio offers the ultimate flexibility for any cell separation procedure. Isolate a specific target cell type with one of the following strategies:

Positive cell isolation

Positive cell isolation involves magnetic labeling of a specific target cell type. During the separation process these cells are retained within the column, while the unlabeled cells flow through. When the column is removed from the magnetic field, the target cells can be eluted. The low-labeling concentration and small size of the MicroBeads also contribute to preventing the activation of target cells, rendering this method gentle and efficient for a wide variety of cell types and tissues.

Negative cell isolation

To isolate the target cells unlabeled, non-target cells are magnetically labeled and retained in the column. The unlabeled target cells are then collected in the flowthrough fraction. MACS Mouse Cell Isolation Kits for untouched isolation use antibodies and MACS Mouse MicroBeads for this purpose, making it ideal when direct antibody binding to target cells is not desired.

Sequential cell separation

1. Depletion or negative isolation, followed by positive isolation

This is an ideal method when target cells and non-target cells share a common marker. Undesired cells, which share the common marker with the target cells, are depleted using a marker distinct from the common one. The flow-through will contain both the target cells and some undesired cells, lacking the shared marker with the target cell type. The next step involves positive selection using MACS Mouse MicroBeads that bind to the common marker to exclusively isolate the target cells.

2. Multiple subsequent positive isolations

This method involves multiple sequential positive isolations using MACS Mouse MicroBeads, targeting two different markers. The first positive isolation uses MACS Mouse MicroBeads binding to the first marker. Following the separation, unlabeled cells, i.e., the negative fraction, is used in the second positive isolation. Here, MACS Mouse MicroBeads are used to target the second marker.



StraightFrom Spleen Kits: Efficient. Reliable. Fast.

Isolate mouse cells directly from the spleen — in just 15 minutes

Explore the new StraightFrom Spleen Kits and learn how you can save 30 minutes per cell isolation.

Efficient: combined tissue dissociation and magnetic labeling

Timesaving: spend 15 minutes with the new protocol, instead of the standard 45- to 90-minute process

Positive cell isolation	Order no.
StraightFrom Spleen CD11c MicroBead Kit, mouse	130-130-146
StraightFrom Spleen CD19 MicroBead Kit, mouse	130-129-973
StraightFrom Spleen CD4 MicroBead Kit, mouse	130-129-970
StraightFrom Spleen CD8α MicroBead Kit, mouse	130-130-149
StraightFrom Spleen CD90.1 MicroBead Kit, mouse	130-129-972
StraightFrom Spleen CD90.2 MicroBead Kit, mouse	130-129-971

Negative cell isolation	Order no.
StraightFrom Spleen CD8a$^+$ T Cell Isolation Kit, mouse	130-134-214
StraightFrom Spleen Pan T Cell Isolation Kit, mouse	130-134-737
StraightFrom Spleen CD4$^+$ T Cell Isolation Kit, mouse	130-134-233

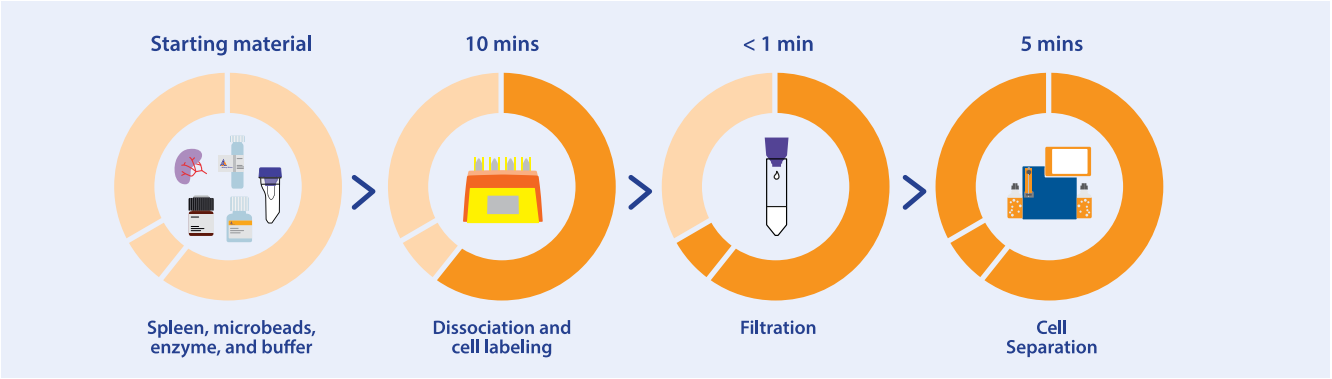


Figure 4. StraightFrom Spleen MicroBead Kits protocol: starting material, followed by combined tissue dissociation and cell labeling, and then filtration and cell isolation.

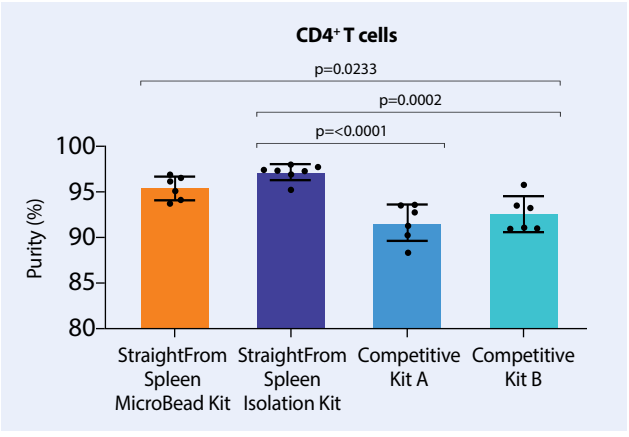


Figure 5: Purity data following positive and negative cell isolation, respectively, using StraightFrom Spleen Kits for CD4$^+$ T cells. In parallel, untouched cell isolation was performed according to the recommended competitors' protocols.

LEARN MORE

Scan this QR code to explore MACS Mouse Products.

▸ **bit.ly/4cbP8I1**

Select from our suite of MACS Mouse Products today

Product	Order no.
Positive cell isolation	
Anti-Mouse IgG1-Microbeads, 2 ml	130-047-101
Anti-Mouse IgG1-Microbeads, 1 ml	130-047-102
Anti-Mouse IgG2a+b-Microbeads, 2 ml	130-047-201
Anti-Mouse IgG2a+b-Microbeads, 1 ml	130-047-202
Anti-Mouse IgM-Microbeads, 2 ml	130-047-301
Anti-Mouse IgM-Microbeads, 1 ml	130-047-302
Anti-Mouse IgG(H+L)-Microbeads, 2 ml	130-048-401
Anti-Mouse IgG(H+L)-Microbeads, 1 ml	130-048-402
CD5 (Ly-1) MicroBeads, mouse	130-049-301
CD45R (B220) MicroBeads, mouse	130-049-501
CD11b MicroBeads, human, mouse	130-049-601
CD62L (L-selectin) MicroBeads, mouse	130-049-701
Anti-Ter-119 MicroBeads, mouse	130-049-901
CD45 MicroBeads, mouse	130-052-301
Anti-MHC Class II MicroBeads, mouse	130-052-401
CD49b (DX5) MicroBeads, mouse	130-052-501
CD25 MicroBead Kit, mouse	130-091-072
CD117 MicroBeads, mouse	130-091-224
Anti-mPDCA-1 MicroBeads, mouse	130-091-965
CD146 (LSEC) MicroBeads, mouse	130-092-007
Anti-Prominin-1 Microbeads, mouse	130-092-333
Pan DC MicroBeads, mouse	130-092-465
Anti-Prominin-1 MB, mouse-small size	130-092-564
CD154 Enr. & Detect. Kit (PE), mouse	130-093-129
Anti-A2B5 MicroBeads, human, mouse, rat	130-093-388
CD11b (Microglia) MicroBeads, human, mouse	130-093-634
IL-17 Secr Assay - Enr&Det Kit (PE), mouse	130-094-213
Anti-SSEA-1 (CD15) MicroBeads, mouse, human	130-094-530
Anti-O4 MicroBeads, human, mouse, rat	130-094-543
CD3e MicroBead Kit, mouse	130-094-973
Anti-NKp46 MicroBead Kit, mouse	130-095-390
Epidermal Langerhans Cell MB Kit, mouse	130-095-408
Anti-GLAST (ACSA-1)-MB, mouse, rat-small size	130-095-825
Anti-GLAST (ACSA-1)-MB, mouse, rat	130-095-826
CD115 MicroBead Kit, mouse	130-096-354
Anti-O4 MicroBeads, mouse, rat-small size	130-096-670
CD117 MicroBeads, mouse - lyophilized	130-097-146

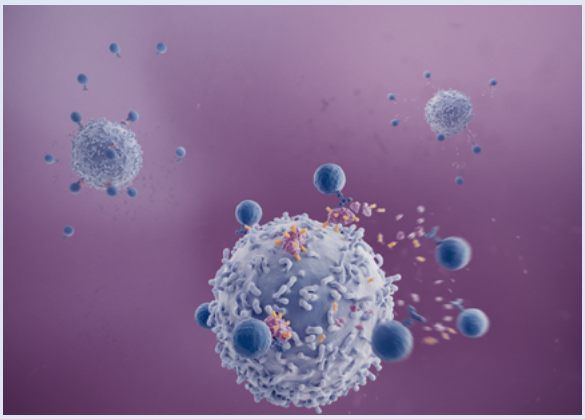
Product	Order no.
CD43 (Ly-48) MicroBeads, mouse - lyophilized	130-097-148
CD45R (B220) MicroBeads, m - lyophiliz	130-097-152
CD45 MicroBeads, mouse - lyophilized	130-097-153
Anti-AN2 MicroBeads, human and mouse	130-097-170
Anti-AN2 MicroBeads, mouse-small size	130-097-171
CD309 MicroBead Kit, mouse	130-097-346
CD31 MicroBeads, mouse	130-097-418
CD207 (Langerin) MicroBeads, mouse	130-097-572
Anti-ACSA-2 MicroBead Kit, mouse	130-097-678
Anti-ACSA-2-MB Kit, mouse-small size	130-097-679
Anti-PSA-NCAM MicroBead Kit, human, mouse, rat	130-097-859
Anti-A2B5 MicroBead Kit, human, mouse, rat	130-097-864
CD138 Microbeads, mouse	130-098-257
CD23 MicroBeads, mouse	130-098-784
Anti-Ly6b.2 (7/4) MicroBeads, mouse	130-100-781
Neonatal Cardiac Fibroblast Iso Kit, mouse	130-101-372
CD140a (PDGFRα) MicroBead Kit, mouse	130-101-502
CD22 MicroBeads, mouse	130-103-776
Neonatal Cardiac Endoth. Cell Iso Kit, mouse	130-104-183
Anti-Integrin alpha-7 MicroBeads, mouse	130-104-261
CD93 MicroBeads, mouse	130-105-753
CD326 (EpCAM) MicroBeads, mouse	130-105-958
Adipose Tissue Progenitor Iso Kit, mouse	130-106-639
Anti-Sca-1 MicroBeads, mouse	130-106-641
Anti-F4/80-MicroBeads UltraPure, mouse	130-110-443
Germinal Center B Cell (PNA) MB Kit, mouse	130-110-479
CD45 (TIL) MicroBeads, mouse	130-110-618
Tumor-Asso. Fibroblast Isolation Kit, mouse	130-116-474
CD4 (TIL) MicroBeads, mouse	130-116-475
CD8 (TIL) MicroBeads, mouse	130-116-478
CD4/CD8 (TIL) MicroBeads, mouse	130-116-480
CD4 (L3T4) MicroBeads, mouse	130-117-043
CD8a (Ly-2) MicroBeads, mouse	130-117-044
Anti-Siglec-F MicroBeads, mouse	130-118-513
anti-Ly-6G Microbeads Ultrapure, mouse	130-120-337
CD90.1 MicroBeads, mouse and rat	130-121-273
CD90.2 MicroBeads, mouse	130-121-278
CD19 MicroBeads, mouse	130-121-301

Product	Order no.
aSca-1 MicroBead Kit (VioBright FITC), mouse	130-123-124
CD11c MicroBeads UltraPure, mouse	130-125-835
REAlease CD90.1 MicroBead Kit, mouse	130-126-704
REAlease CD8a MicroBead Kit, mouse	130-126-707
CD11b Microbeads UltraPure, mouse	130-126-725
Product	**Order no.**
Negative cell isolation	
CD43 (Ly-48) MicroBeads, mouse	130-049-801
Lineage Cell Depletion Kit, mouse	130-090-858
B Cell Isolation Kit, mouse	130-090-862
Pan T Cell Isolation Kit II, mouse	130-095-130
Pluripotent Stem Cell Isolation Kit, mouse	130-095-267
Feeder Removal MicroBeads, mouse	130-095-531
Pan B Cell Isolation Kit, mouse	130-095-813
Naive CD8a$^+$ T Cell Isolation Kit, mouse	130-096-543
Neutrophil Isolation Kit, mouse	130-097-658
Monocyte Isolation Kit (BM), mouse	130-100-629
Neonatal Cardiomyocyte Isolation Kit, mouse	130-100-825
Pan DC Isolation Kit, mouse	130-100-875
CD171 (L1CAM)-MB Kit, mouse-small size	130-101-548
CD8a$^+$ T Cell Isolation Kit, mouse	130-104-075
Myelin Isolation Beads, human, mouse, rat	130-104-257
Satellite Cell Isolation Kit, mouse	130-104-268
Pan B Cell Isolation Kit II, mouse	130-104-443
Naive CD4$^+$ T Cell Isolation Kit, mouse	130-104-453
CD4$^+$ T Cell Isolation Kit, mouse	130-104-454
Mouse Cell Depletion Kit	130-104-694
Plasmacytoid Dendritic Cell Iso Kit, mouse	130-107-093
Tissue Stem Cell pre-Enrichment Kit, mouse	130-109-205
Tumor Cell Isolation Kit, mouse	130-110-187
Macrophage Iso Kit (Peritoneum), mouse	130-110-434
Direct Lineage Cell Depletion Kit, mouse	130-110-470
Neuron Isolation Kit II, mouse	130-115-389
Neuron Isolation Kit II, mouse-smallSize	130-115-390
NK Cell Isolation Kit, mouse	130-115-818
Adult Neuron Iso Kit, mouse - small size	130-126-602
Adult Neuron Isolation Kit, mouse	130-126-603

Product	Order no.
Sequential cell separation	
CD4$^+$ CD25$^+$ Reg. T Cell Iso. Kit, mouse	130-091-041
CD8+ DC Isolation Kit, mouse	130-091-169
CD4$^+$ Dendritic Cell Isol.Kit, mouse	130-091-262
TCR g/d T Cell Isolation Kit, mouse	130-092-125
CD138$^+$ Plasma Cell Iso.Kit, mouse	130-092-530
CD105 Multisort Kit(PE), mouse	130-092-924
Myeloid Derived Suppressor Cell Kit, m	130-094-538
Memory B Cell Isolation Kit, mouse	130-095-838
Regulatory B Cell Isolation Kit, mouse	130-095-873
NK1.1+ iNKT Cell Isolation Kit, mouse	130-096-513
B-1a Cell Isolation Kit, mouse	130-097-413
MZ and FO B Cell Isolation Kit, mouse	130-100-366
CD4$^+$ CD62L$^+$ T Cell Isolation Kit, mouse	130-106-643

Did you know about the REAlease Mouse Kits?

Product	Order no.
REAlease CD90.1 MicroBead Kit, mouse	130-126-704
REAlease CD90.2 MicroBead Kit, mouse	130-126-706
REAlease CD8a MicroBead Kit, mouse	130-126-707



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Learn more about REAlease MicroBead Technology by scanning this QR code.

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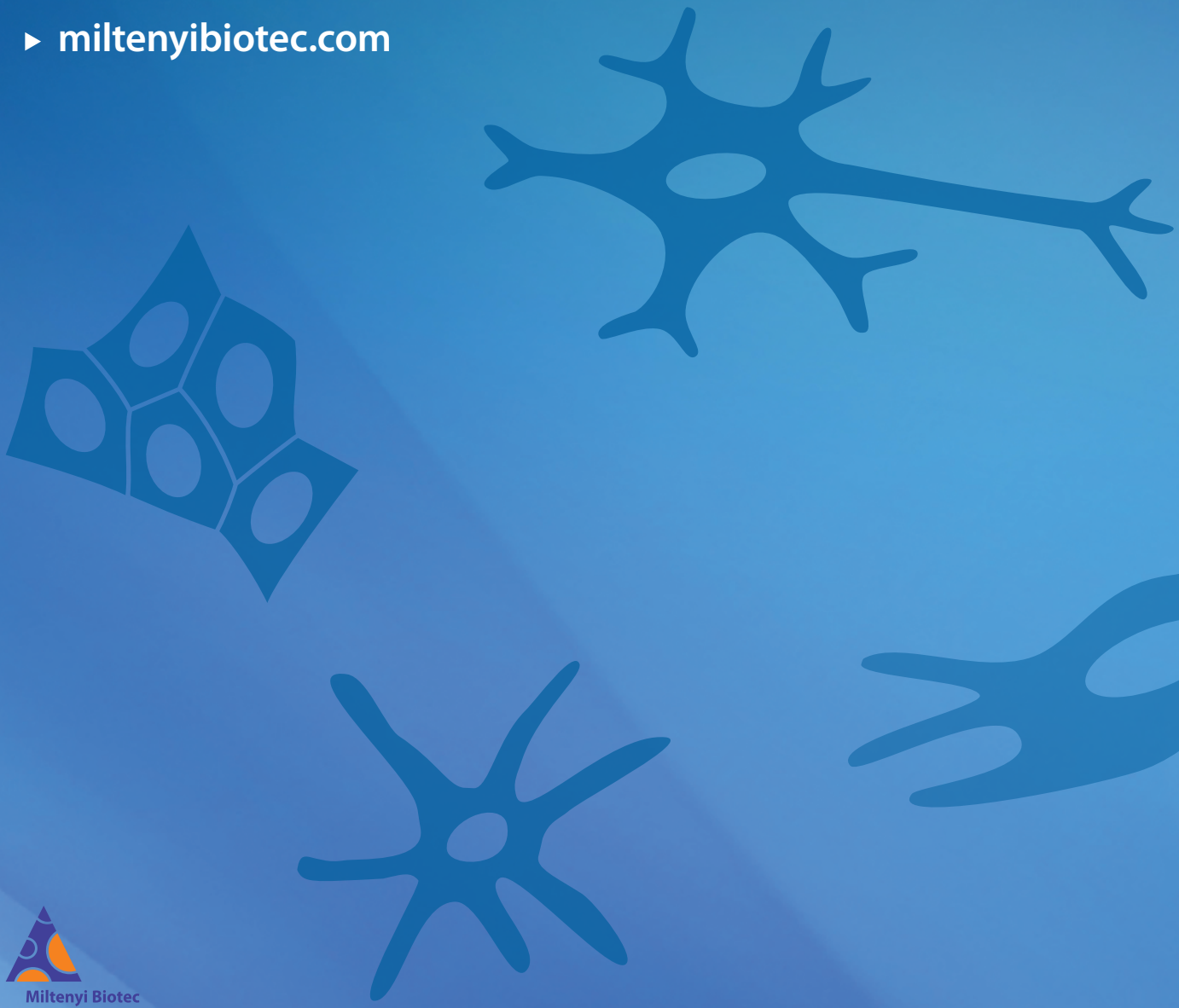
My experience with Miltenyi has been nothing short of exceptional. The team has consistently demonstrated a high level of expertise and dedication, always ready to assist with any questions or doubts I had. Their kindness and understanding have made every interaction a positive one, ensuring that I felt supported and valued. Whether I needed technical support or guidance, the Miltenyi team was always there, providing prompt and thorough assistance. Their commitment to customer satisfaction is evident, and I am grateful for their unwavering support throughout our collaboration.



Silvia Vicenzi, PhD
Postdoctoral Scholar, Moores Cancer Center,
Chair of Postdoctoral Association,
UC San Diego


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