MACS

Miltenyi Biotec

Everything you need for your Natural Killer cell research

Smart, fast tissue dissociation

NK cell isolation that meets all your needs

Harmonized cell culture and expansion tools

Introduction

Inspiring technologies for creative immunologists

Miltenyi Biotec has worked alongside researchers around the world to develop innovative tools to support leading-edge science.

From tissue dissociation to Natural Killer (NK) cell isolation, culture, and cell analysis, we have an attractive solution for each step of your workflow.

Collaborating your talents with our tools, we've got the right ingredients to make groundbreaking research in the field of NK cell immunology.

The complete workflow for translational NK cell research

NK-cells are part of the innate immune system and mediate the response against viruses, parasites, bacteria and tumor cells. Due to their fundamental role within the immune system, NK cells are of greatest interest for immunology research and with our broad portfolio of products we aim to provide a complete workflow solution for the investigation of NK cells. We support you during all steps of your experiments:

- Broad NK cell product portfolio to fit your research needs
- Optimized tools for your NK cell separation, no matter what your starting material is
- Standardized cell culture medium and cytokines up to MACS GMP grade for optimal NK cell culture conditions
- Complete REAfinity™ Recombinant Antibodies portfolio that enables reliable and reproducible analysis of NK cells
- Translate your research into the clinic with premium grade and MACS GMP products

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Start smart

The secret to success lies in your starting material

Automated and reproducible tissue dissociation

Experience the gentleMACS™ Portfolio of gentle, versatile and reliable benchtop tissue dissociators that can process up to eight samples in parallel. They come with programmable protocol settings and optional temperature regulation to ensure standardized tissue dissociation.

Together with our quick and easy-to-use MACS® Tissue Dissociation Kits you will get high recovery rates of viable and functional single cells. Try our gentleMACS Portfolio to experience:

- Efficient walkaway tissue dissociation
- Reliable, user-independent results
- High yield of viable, single cell suspension
- Preserved cell integrity and surface epitopes through gentle processing protocols
- Optimal sample preparation for any downstream application including the isolation of NK cells

Figure 1: gentleMACS Dissociator, gentleMACS Octo Dissociator, gentleMACS Octo Dissociator with Heaters and the unique gentleMACS C and T Tubes for an optimized cellular and molecular downstream analysis.

Automated dissociation of murine liver

The Liver Tissue Dissociation Kit enables automated generation of single-cell suspensions from liver tissue, using a combined enzymatic and mechanical dissociation procedure. Taking advantage of the great efficiency of enzymatic dissociation, this kit provides high yield of viable cells, compared to standard collagenase methods, with preserved cell integrity and surface epitopes.

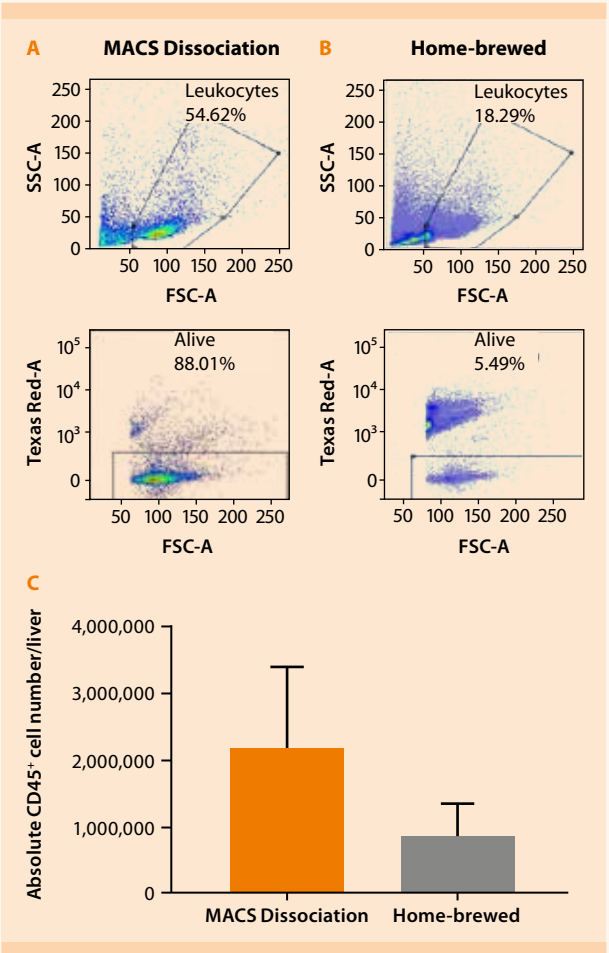

Figure 2: Standardized tissue dissociation. Mouse liver tissue was dissociated using the Liver Dissociation Kit and the gentleMACS Octo Dissociator with Heaters. The cells were assessed for viability and analyzed with the Flowlogic™ Analyzer. Flow cytometry analysis shows that the dissociated cell suspension contained minimal debris (A), higher % of viable cells (B) and a high absolute number of CD45⁺ cells per liver (C), compared to conventional methods like Collagenase 2. Home-brewed: gray bar, n=15. MACS Dissociation: orange bar (n=7).

Select the best

Choose the optimal technology for your NK cell research

MACS® Technology

One portfolio for all your NK cell isolation needs: With the MACS® Cell Separation portfolio, you enjoy the freedom to choose the cell isolation option that's best for your specific requirements. Our proven magnetic cell separation technology is continuously expanding to offer new and innovative options across basic and clinical research. Unsurpassed possibilities for the isolation of NK cells:

- Nano-sized beads (column-based technology with MACS® MicroBeads, Cell Isolation Kits, and StraightFrom® MicroBeads) for highest purity and recovery
- Micro-sized beads (column-free MACSxpress® Technology) for maximum convenience and fastest isolations

Figure 3: The MultiMACS™ Cell 24 Separator Plus was specifically developed for simultaneous multisample magnetic cell separation using MACS Technology.

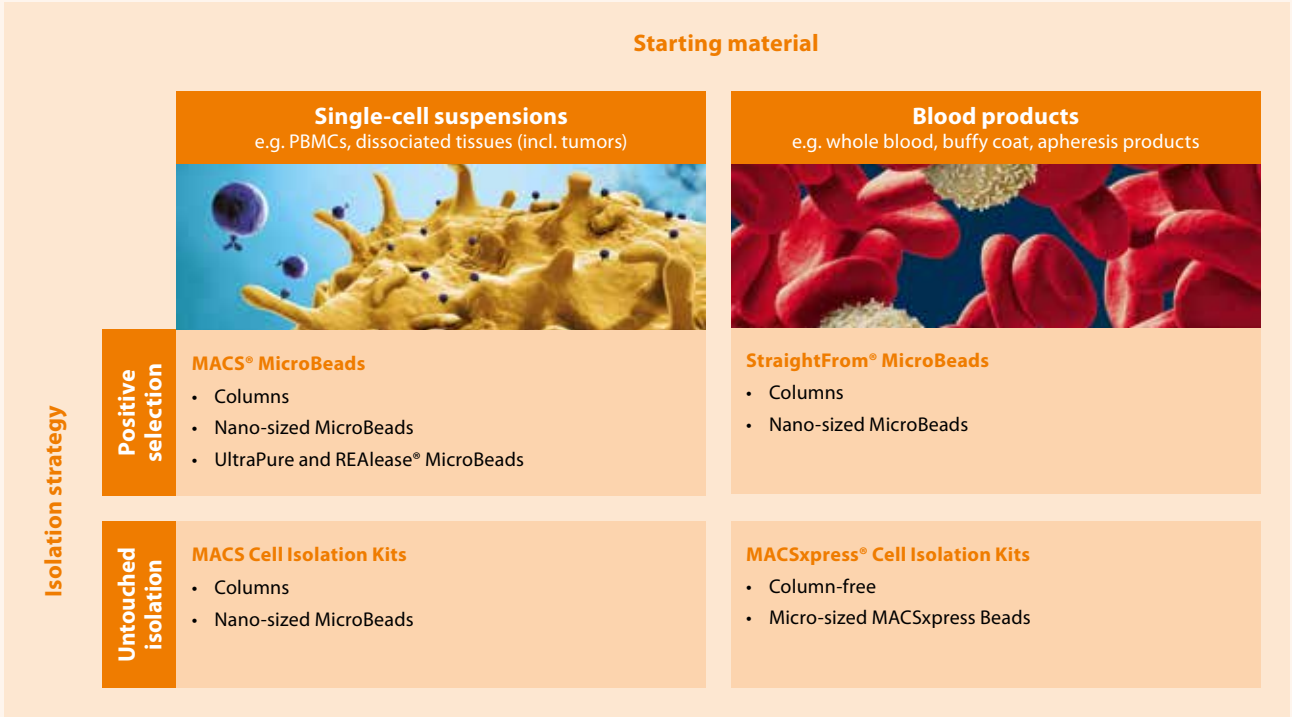

Figure 4: Overview of MACS MicroBead Technology and MACSxpress Technology for smart and effective isolation of NK cells.

Select the best

Isolation of NK cells and NKT cells with high purity and excellent recovery

What's your starting material?

Our cell separation product portfolio offers a convenient way to isolate functional NK cells as well as other NK cell subpopulations from a variety of starting materials (fig. 5).

The isolation of NK cells by MACS® Technology yields positive and negative fractions of outstanding purity that are directly available for downstream applications, e.g., *in vitro* cytotoxic assays.

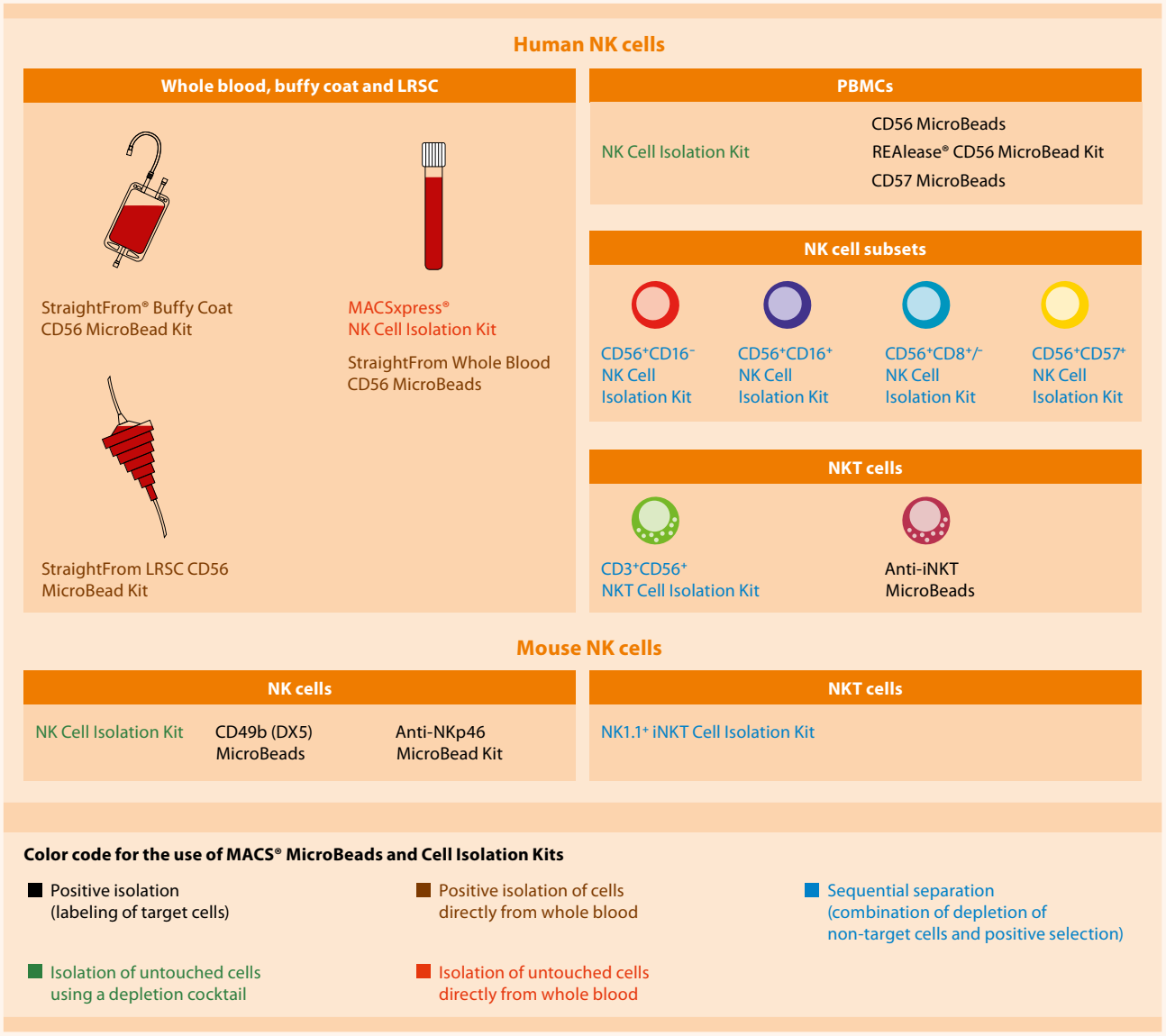

Figure 5: Choose the best reagents for your application from StraightFrom® MicroBeads, REAlease™ MicroBeads, MACS® MicroBeads, MACS and MACSxpress® Cell Isolation Kits.

Select the best

Speed up your isolation of NK cells

Isolation of human NK cells directly from whole blood

Our MACSxpress® NK Cell Isolation Kit, human has been developed for the isolation of untouched NK cells from up to 30 mL of freshly drawn anticoagulated whole blood and offers several advantages:

- **Convenient:** three simple steps without density gradient centrifugation
- **Fast:** from whole blood to NK cells in 20 minutes
- **Effective:** maximum recovery of NK cells, even from small amounts of blood (2 mL)
- **Versatile:** efficient isolation including from umbilical cord blood

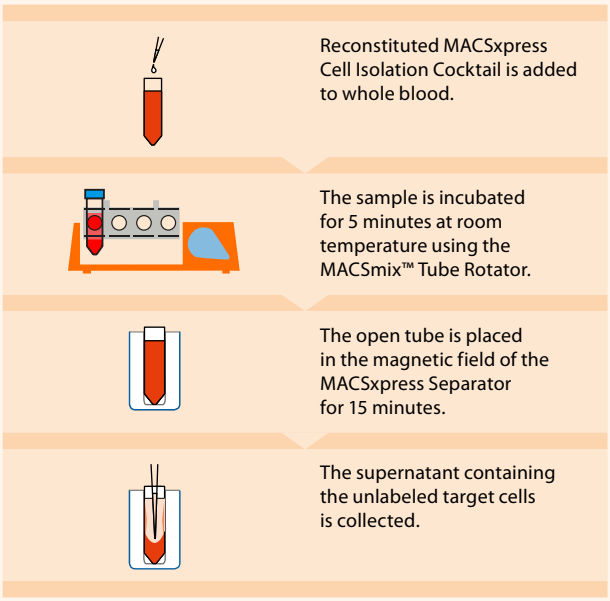

Figure 6: NK cell isolation in four simple steps directly from whole blood in 20 min using the MACSxpress NK Cell Isolation Kit, human. The cells are immediately ready for downstream assays.

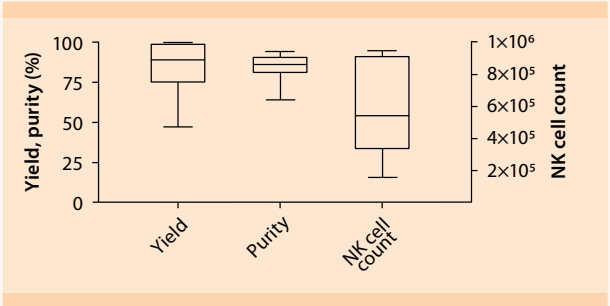

Figure 7: Robustness of MACSxpress Technology. Whole blood samples using only 2 mL of whole blood from healthy donors.

From an entire buffy coat to target cells in under 30 minutes

StraightFrom® Buffy Coat MicroBeads enable gentle and fast magnetic isolation of specific cell types directly from buffy coat. An entire buffy coat can be processed in one run using Whole Blood Columns and the MultiMACS™ Cell24 Separator Plus. The target cells have high purities and recovery rates and the entire process takes less than 30 minutes.

- **Convenient:** cell isolation directly from buffy coat
- **Fast:** eliminate density gradient centrifugation, erythrocyte lysis and washing steps
- **Complete:** everything you need to process an entire buffy coat in one kit

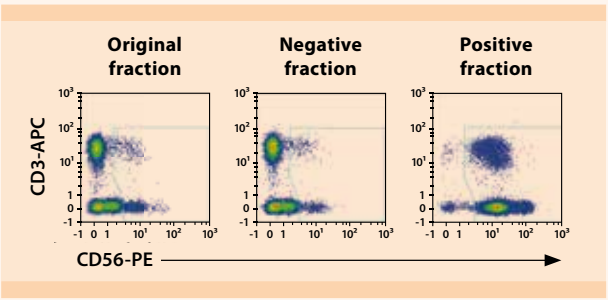

Figure 8: Separation of a buffy coat sample using the StraightFrom Buffy Coat CD56 MicroBead Kit and the MultiMACS Cell24 Separator Plus with the Single-Column Adapter and Whole Blood Columns. Cells were fluorescently stained with CD56-PE, CD3-APC, as well as CD45-VioBlue® and analyzed by flow cytometry using the MACSQuant® Analyzer.

Select the best

Do not worry about NK cell activation

Versatile isolation of human NK cells with MACS® Technology:

- Highest NK cell purity and yield
- Unrivaled T cell depletion
- Saves time, as cells are immediately ready for any downstream application

REAlease® CD56 MicroBeads: isolate any NK cell subset
CD56 MicroBeads enable positive selection or depletion of CD56⁺ cells by direct magnetic labeling (NK and NKT cells). The use of CD56 REAlease MicroBeads followed by a depletion using CD3 MicroBeads leads to pure and non-activated NK cells.

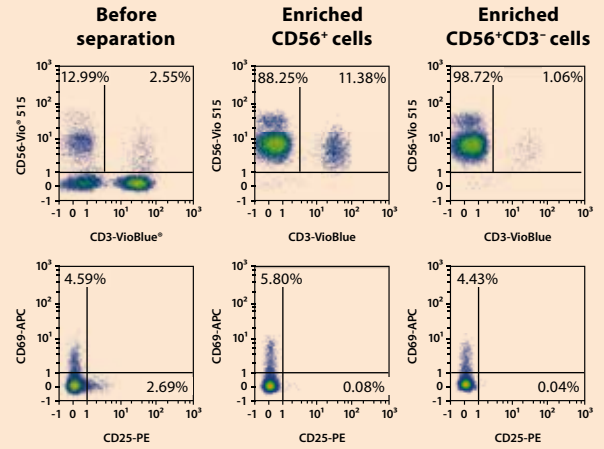

Figure 9: REAlease CD56 MicroBeads were used for the enrichment of CD56⁺ cells. After removal of the REAlease MicroBeads, the CD3⁺ cell fraction was depleted from the CD56⁺ cell population with MACS CD3 MicroBeads to yield CD56⁺CD3⁻ NK cells with a high purity of 98%. No activation of the NK cells by monitoring CD69 and CD25 levels by flow was observed after isolation.

Reliable NK cell isolation of human NK cells
With MACS® Technology rest assure your NK cell isolation comprises both CD56^{bright} and CD56^{dim} subsets.

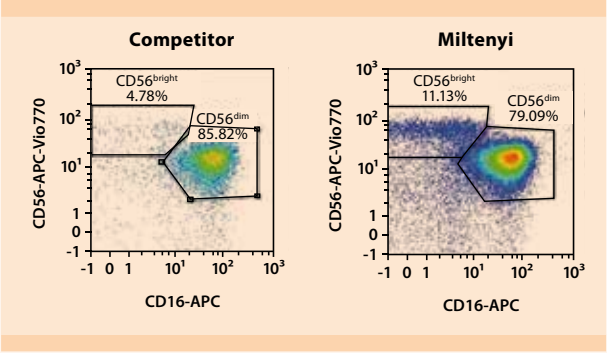

Figure 10: Isolated NK cells comprise CD56^{dim} and CD56^{bright} subsets. Isolated cells from competitor (left) yield less CD56^{bright} subpopulation compared to cells isolated using MACS Technology (right). Cell debris and dead cells were excluded from the analysis based on scatter signals and propidium iodide fluorescence.

Isolate pure mouse NK cells
Efficiently isolate NK cells from mouse spleen with the NK Cell Isolation Kit, mouse.

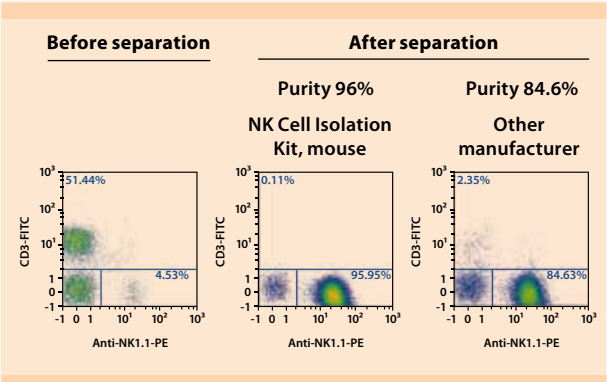

Figure 11: Unbeatable purity and recoveries with the NK Cell Isolation Kit, mouse. NK cells were isolated using several competitor kits against the NK Cell Isolation Kit. The NK Cell Isolation Kit yields higher purities compared to kits from other manufacturers.

Alternatively, CD49b (DX5) MicroBeads or Anti-NKp46 MicroBead Kit enable the isolation of NK cells from several inbred mouse strains.

Culture is key

Optimal culture conditions give ideal results

The smart way to cultivate, expand, and analyze your NK cells

Activation, expansion, and stimulation of NK cells can be challenging. Our cell culture tools are designed and optimized for NK cell culture. The combination of NK MACS® Medium, MACS® Cytokines and NK cell expansion tools, are perfectly suited for *in vitro* culture of NK cells.

NK Cell Activation / Expansion Kit
Reliable and reproducible activation and expansion of NK cells is a clear requirement for effective downstream experiments. Miltenyi Biotec provides an easy-to-use kit to meet this demand.

NK cell expansion in two easy steps:

1. Incubate PBMCs or isolated NK cells with MACSiBead™ Particles pre-loaded with antibodies against CD2 and CD335 (NKp46).
2. Allow the cells to expand in culture for 2–3 weeks to receive functional NK cells.

NK MACS® Medium, research grade
NK MACS Medium offers the perfect solution to expand and activate human NK cells from various sources, including peripheral blood mononuclear cells (PBMCs) or isolated NK cells. Its defined formulation enables expansion of NK cells that are fully functional, ready for any downstream application.

NK MACS Medium, research grade, is an optimized animal component-free cell culture medium enabling reproducible application in human cell culture.

- Superior NK cell expansion*
- Xeno-free
- Minimal growth of unwanted cells like B-, T-, and Dentritic cells

*Supplementation with serum or autologous plasma is necessary

Superior expansion of NK cells
NK cell expansion from PBMCs or isolated NK cells in NK MACS Medium compared to other standard culture methods.

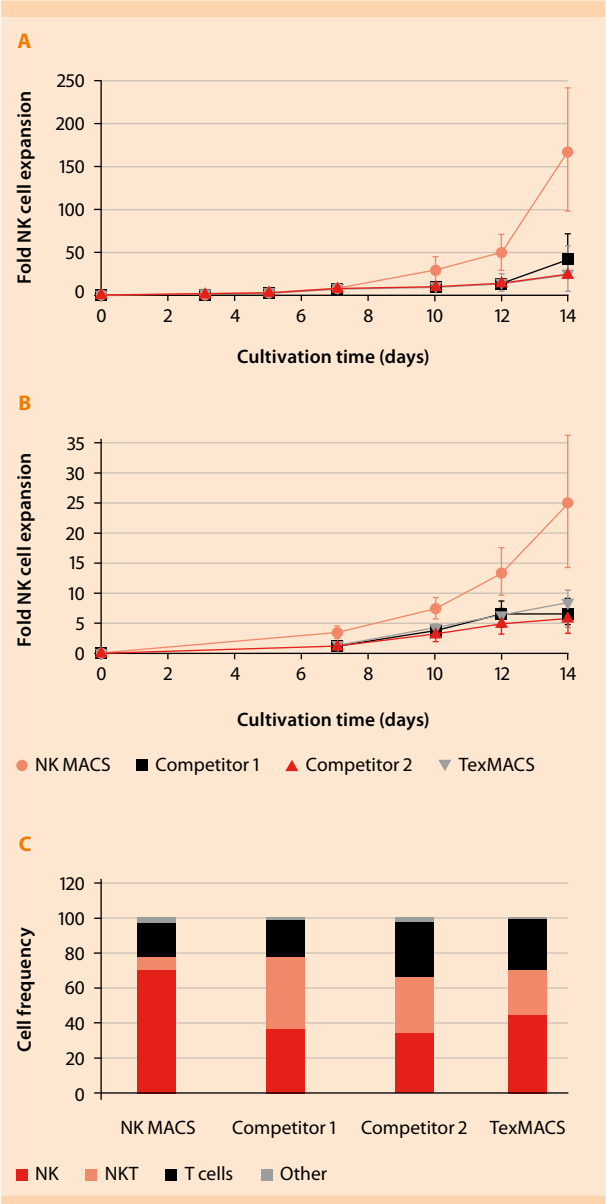

Figure 12: NK cells in NK MACS Medium showed superior expansion compared to standard culture methods. NK cell fold expansion from (A) PBMCs (n=3) or (B) isolated NK cells (n=3) using 5% AB serum and 500 IU/mL of IL-2. (C) Cell composition after 14 days of PBMC expansion in different standard culture media. NK ($CD3^-CD56^+$), T cells ($CD3^+$), NKT ($CD3^+CD56^+$) and other ($CD3^-CD56^-$).

Culture is key

Perfect tools to empower your research

NK cells ready for any downstream application

NK cells cultivated in NK MACS® Medium retain their natural cytotoxicity against the K-562 cell line and are suitable for any downstream application including cytotoxicity killing assays and flow cytometry analysis.

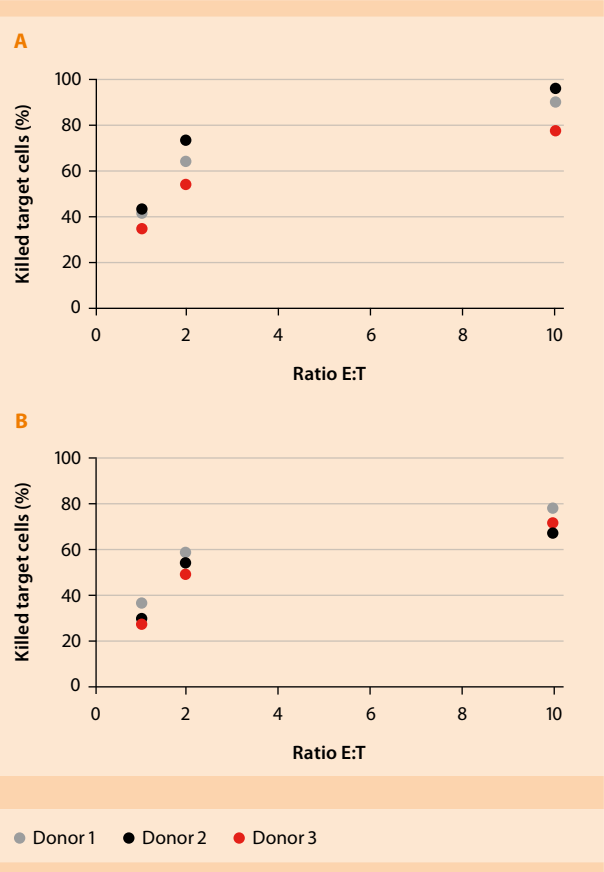

Figure 13: NK cells were expanded for 9 days in NK MACS Medium starting from (A) PBMCs or (B) isolated NK cells and were analyzed via flow cytometry for cytotoxicity against K-562 cells at different effector-to-target (E:T) ratios.

MACS® Cytokines for NK cells

High-quality cytokines are essential for functionally relevant results. That's why MACS® Cytokines are produced in Germany under strict manufacturing standards. Cytokines for mouse and human NK cell culture, such as IL-2, IL-12, IL-15, and IL-21 are available for various applications: basic, pre-clinical, and clinical research.

MACS Cytokines for NK cells

- Standardized lot-specific biological activities
- Superior quality, up to MACS GMP grade
- Small, bulk, and customized fillings

Research and premium grade

- High quality
- Cost-effective solution
- Consistent and reliable cell culture results

MACS GMP grade

- Standardized high biological activities (IU/mg)
- Consistent product quality for optimal cell stimulation
- Documentation of every processing step

Cell analysis

Flow cytometry proven for NK cells

Figure 14: MACSQuant Analyzers enhance your flow cytometry experience by providing high-sensitivity and accurate analyses.

MACSQuant® Analyzers

The MACSQuant® Flow Analyzers are best-in-class benchtop flow cytometers for performing highly sensitive multicolor flow analyses.

- Three powerful lasers and 10 optical parameters
- Convenient hands-free processing of up to 96 samples
- Automated sample labeling
- Precise and accurate absolute cell counting
- Live, worldwide remote support, 24 hours a day, Monday to Friday

- **MACSQuant Analyzer 10**
  automating and standardizing key assays
- **MACSQuant Analyzer 16**
  increasing data acquisition parameters with more colors
- **MACSQuant X**
  high-throughput applications from streamlined fluidics and sample processing
- **MACSQuant VYB**
  red fluorescent protein analysis and optimized FITC and PE applications

Cell analysis

Solutions to power your NK cell analysis

Flow cytometry proven for NK cells

When optimizing an experiment from beginning to end, flow analysis tools lead you one step closer to reliable and reproducible results. The analysis tools of Miltenyi Biotec's NK cell portfolio consist of a huge variety of MACS® Antibodies for NK-specific markers, both mouse and human.

REAfinity™ Recombinant Antibodies – flow cytometry is in their genes

Miltenyi Biotec offers a broad portfolio of recombinant engineered antibodies for NK cell subsets that provide

- High lot-to-lot consistency – meets new reproducibility standards
- One universal isotype – reduces complexity of experiment planning
- Mutated Fc region – eliminates background signal

Antibodies, are available as conjugates to a variety of fluorochromes to address your multicolor flow needs – FITC, VioBright™ FITC, PE, APC, VioBlue®, VioGreen™, PE-Vio® 770, APC-Vio 770, PerCP-Vio 700.

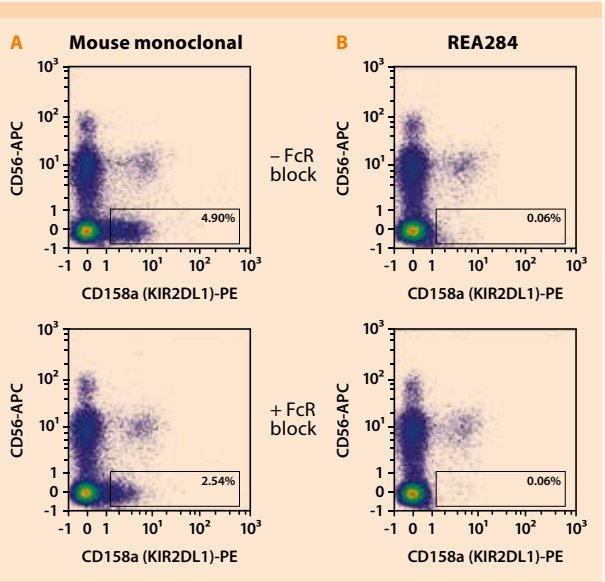

Figure 15: Staining with REAfinity Antibodies shows no background signal, even without FcR block. Human PBMCs were stained with either a mouse monoclonal CD158a-PE antibody or REAfinity CD158a-PE (clone:REA284). Staining was performed without (top) and with (bottom) FcR block. The mouse monoclonal antibody binds unspecifically to CD56-negative cells (A). Staining with the REAfinity Antibody, shows no background signal.[1]

Standardized and reliable panels that allow reproducibility

Having reliable and reproducible panels is imperative. Take a look at our publication on harmonized panels, tested in different labs and with different instruments.[2]

REAfinity™ Antibodies for NK cell phenotype

Marker	Clones
CD45-VioGreen	REA747
CD3-VioBlue	REA613
TCR γ/δ –VioBlue	REA591
CD14-VioBlue	REA599
CD19-VioBlue	REA675
SYTOX Blue- Dead cell marker	–
Anti-KIR2D-FITC	REA1042
CD159a (NKG2A)-PE-Vio770	REA110
CD159c (NKG2C)-PE	REA205
CD314 (NKG2D)-PerCP, PE-Vio615	REA797
CD16-APC	REA423
CD56-APC-Vio770	REA196

REAfinity Antibodies for NK cell functionality

Marker	Clones
CD45-VioGreen	REA747
CD14-VioBlue	REA599
CD19-VioBlue	REA675
SYTOX Blue-Dead cell marker	–
CD25-Vio Bright FITC	REA570
CD107a (LAMP-1)-PE	REA792
CD336 (NKp44)-PE-Vio770	REA1163
CD3-PerCP-Vio700	REA613
Anti-TCR γ/δ-PerCP-Vio700	REA591
CD16-APC	REA423
CD56-APC-Vio770	REA196

[1] Cells were analyzed by flow cytometry on the MACSQuant® Analyzer 10. Cell debris and dead cells were excluded from the analysis based on scatter signals and propidium iodide (PI) fluorescence.

[2] Veluchamy, J. P. *et al.* (2017) Scientific Reports 7: 43873.

Cell analysis

KIR typing from phenotype to genotype

A cell genotype doesn't necessarily reflect its phenotype. Killer cell immunoglobulin-like receptors (KIRs), a family of receptors recognizing HLA I molecules on target cells, are no exception. Get the KIR-specific antibodies you need for KIR phenotyping from Miltenyi Biotec.

We've assembled the broadest portfolio of KIR-specific antibodies available. Additionally, you can complement your NK cell phenotyping by flow cytometry with profiling of human KIR genes at the genomic DNA or mRNA level using the KIR Typing Kit.

KIRs

Marker	Hybridoma Clone	REA Clones
Anti-KIR2D	NKVFS1	REA1042
CD158a (KIR2DL1)	Not available	REA284
CD158a/h (KIR2DL1/DS1)	11PB6	REA1010
CD158b2 (KIR2DL3)	Not available	REA147
CD158b (KIR2DL2/DL3)	DX27	REA1006
CD158i (KIR2DS4)	JJC11.6	REA860
CD158e (KIR3DL1)	DX9	REA1005
CD158e1/e2 (KIR3DL1/DS1)	Not available	REA168
CD158d (KIR2DL4)	Not available	REA768
CD158e/k (KIR3DL1/DL2)	5.133	REA970

Figure 16: The KIR Typing Kit allows the detection of all known human KIR genes and alleles at the genomic DNA and mRNA level.

Cell Line	Anti-KIR2D	Anti-KIR2DL1	Anti-KIR2DL1/DS1	Anti-KIR2DL3	Anti-KIR2DL2/DL3	Anti-KIR2DL5	Anti-KIR2DS4	Anti-KIR3DL1	Anti-KIR3DL1/DL2	Anti-KIR3DL1/S1
Jurkat (untransduced)										
Jurkat KIR2DS1	+++	+	+++				++		++	
Jurkat KIR2DL1	++	++	++							
Jurkat KIR2DL3	+++			+++	+++					
Jurkat KIR2DS4	+++						+++		++	
Jurkat KIR3DS1									(+)	+
Jurkat KIR3DL1								++	+	++
Jurkat KIR3DL2									+	

Figure 17: Different Jurkat cell lines transduced with different KIR constructs were stained with different anti-KIR antibodies. The plus signs correspond to the following fold increases: (+) 1.5–2-fold , + 2–10-fold increase, ++ 10–100-fold increase and +++ >100-fold increase. The fold increase was calculated using as reference the untransduced Jurkat parental cell line. Clones used in this experiment: KIR2D (NKVFS1), KIR2DL1 (REA284), KIR2DL1/DS1 (11PB6), KIR2DL2/DL3 (DX27), KIR2DL3 (REA147), KIR2DL5 (UP-R1), KIR2DS4 (JJC11.6), KIR3DL1 (DX9) and KIR3DL1/DL2 (5.133).

Cell analysis

Solutions to power your NK cell analysis

Human

Basic NK cell lineage

Marker	Hybridoma Clone	REA Clones
CD159a (NKG2A)	Not available	REA110
CD159c (NKG2C)	Not available	REA205
CD56	AF12-7H3	REA196
CD16	VEP13	REA423
CD94	Not available	REA113
CD85j (ILT2 or LIR-1)	GHI/75	REA998
CD57	TB03	REA769
CD122 (IL-2Rβ)	Not available	REA167
CD117	A3C6E2 and AC126	REA787

Effector functions

Marker	Hybridoma Clone	REA Clones
CD314 (NKG2D)	BAT221	REA797
CD336 (NKp44)	2,29	REA1163
CD335 (NKp46)	9E2	REA808
Anti-NKp80	4A4.D10	REA845
CD226 (DNAM-1)	DX11	REA1040
CD25	3G10 and 4E3	REA945, REA570
CD122 (IL-2Rβ)	Not available	REA167
Anti-Granzyme B	Not available	REA226
CD253 (TRAIL)	RIK-2.1	REA1113
CD69	FN50	REA824
CD244 (2B4)	Not available	REA112
Anti-PLC–γ2	Not available	REA488
Anti-Perforin	delta G9	REA1061
CD107a (LAMP-1)	H4A3	REA792
Anti-KLRG1	Not available	REA261

Transcription factors

Marker	Hybridoma Clone	REA Clones
Anti-T-bet	Not available	REA102
Anti-Eomes	Not available	Not available
Anti-RORγ (t)	Not available	REA278
Anti-GATA3	Not available	REA174
Anti-TOX	Not available	REA473
Anti-Helios	22F6	REA829

Secreted factors

Marker	Hybridoma Clone	REA Clones
Anti-IFN-γ	45-15	REA600
Anti-GM-CSF	BVD2-21C11	Not available
Anti-IL-12 (p35/p70)	C8.6	REA121
Anti-TNF-a	cA2	REA656

Other interesting markers

Marker	Hybridoma Clone	REA Clones
CD366 (Tim-3)	F38-2E2	REA635
Anti-TIGIT	4E1.2	REA1004
CD279 (PD1)	PD1.3.1.3	REA738
CD273 (PD-L2)	MIH18	REA985

KIRs

Marker	Hybridoma Clone	REA Clones
Anti-KIR2D	NKVFS1	REA1042
CD158a (KIR2DL1)	Not available	REA284
CD158a/h (KIR2DL1/DS1)	11PB6	REA1010
CD158b2 (KIR2DL3)	Not available	REA147
CD158b (KIR2DL2/DL3)	DX27	REA1006
CD158i (KIR2DS4)	JJC11.6	REA860
CD158e (KIR3DL1)	DX9	REA1005
CD158e1/e2 (KIR3DL1/DS1)	Not available	REA168
CD158d (KIR2DL4)	Not available	REA768
CD158e/k (KIR3DL1/DL2)	5.133	REA970
CD158f (KIR2DL5)	UP-R1	REA955

Cell analysis

Flow cytometry proven for NK cells

Mouse

Basic NK cell lineage

Marker	Hybridoma Clone	REA Clones
Anti-NK1.1	PK136	REA632*
CD127	A7R 34	REA680
CD335 (NKp46)	29A1.4.9	REA815
CD16/CD32	93	REA377
CD94	18d3	Not available
CD49b	DX5	REA541
CD117	3C11	REA791
CD11b	M1/70.15.11.5	REA592
CD122 (IL-2Rβ)	TM-β1	REA1015

Effector functions

Marker	Hybridoma Clone	REA Clones
CD314 (NKG2D)	CX5	Not available
Anti-NKG2A/C/E	20d5	REA1100
CD335 (NKp46)	Not available	REA815
CD25	7D4	REA568
CD253 (TRAIL)	N2B2	REA1030
Anti-Granzyme B	Not available	REA226
CD244.1 / CD244.2	Not available	REA524 / REA388
CD69	H1.2F3	REA937
CD62L	MEL14–H2.100	REA828
CD178 (Fas-L)	MFL3	Not available
CD107a (LAMP-1)	1D4B	REA777
Anti-KLRG1	2F1	REA1016

Transcription factors

Marker	Hybridoma Clone	REA Clones
CD278 (ICOS)	7E.17G9	REA192
Anti-EOMES	Not available	REA116
Anti-GATA3	Not available	REA174
Anti-RORγ (t)	Not available	REA278
Anti-T-bet	Not available	REA102
Anti-TOX	Not available	REA473
Anti-Helios	22F6	REA829
Anti-Ikaros	Not available	REA919

Secreted factors

Marker	Hybridoma Clone	REA Clones
Anti-IFN-γ	AN.18.17.24	REA638
Anti-TNF-α	MP6-XT22	REA636
Anti-IL-12 (p40/p70)	Not available	REA285
Anti-GM-CSF	MP1-22E9	Not available

Other interesting markers

Marker	Hybridoma Clone	REA Clones
CD25	7D4	REA568
CD27	LG.3A10	REA499
Anti-Tim-3	RMT3-23	REA602
Anti-TIGIT	Not available	REA536
CD279 (PD1)	HA2-7B1	REA802
CD273 (PD-L2)	MIH37	REA985

Ly–49

Marker	Hybridoma Clone	REA Clones
Anti-Ly–49A	A1	REA1018
Anti-Ly–49A/D	Not available	REA853
Anti-Ly–49C/F/I/H	14B11	REA1019
Anti-Ly–49C/I	Not available	REA253
Anti-Ly–49E/F	Not available	REA218
Anti-Ly–49F	HBF–719	REA1021
Anti-Ly–49G2	4D11	REA1053
Anti-Ly–49H	Not available	REA241
Anti-Ly–49I	YLI–90	REA1043
Anti-Ly-49D	4E5	REA1020
Anti-Ly-49G	AT-8	REA1022

Order information

Place your order by fax, phone, or online!

Sample preparation human

Target tissue	Product name	Order no.
Skin	Epidermis Dissociation Kit	130-103-464
N/A	Tumor Dissociation Kit	130-095-929
Umbilical Cord Blood	Umbilical Cord Dissociation Kit	130-105-737
Skin	Whole Skin Dissociation Kit	130-101-540

Cell separation human

Whole blood, buffy coat and LRSC

Product name	Capacity	Order no.
StraightFrom Buffy Coat CD56 MicroBead Kit	1 buffy coat	130-114-963
StraightFrom Whole Blood CD56 MicroBeads	40 mL whole blood	130-090-875
StraightFrom LRSC CD56 MicroBead Kit	1 LRSC	130-117-024
MACSxpress NK Cell Isolation Kit	3×30 mL whole blood	130-098-185

PBMCs: NK and NKT cells

Product name	Capacity	Order no.
NK Cell Isolation Kit	1×10^9 total cells	130-092-657
CD56 MicroBeads	1×10^9 total cells	130-050-401
REAlease CD56 MicroBead Kit	1×10^9 total cells	130-117-033

PBMCs: NK and NKT cell subsets

Product name	Capacity	Order no.
CD57 MicroBeads	1×10^9 total cells	130-092-073
$CD56^+CD16^+$ NK Cell Isolation Kit	2×10^9 total cells	130-092-660
$CD56^+CD16^-$ NK Cell Isolation Kit	2×10^9 total cells	130-092-661
$CD56^+CD8^+/CD8^-$ NK Cell Isolation Kit	2×10^9 total cells	130-092-659
$CD56^+CD57^+$ NK Cell Isolation Kit	1×10^9 total cells	130-093-395
$CD3^+CD56^+$ NKT Cell Isolation Kit	2×10^9 total cells	130-093-064
Anti-iNKT MicroBeads	2×10^9 total cells	130-094-842

Sample preparation mouse

Target tissue	Product name	Order no.
Skin	Epidermis Dissociation Kit	130-095-928
Small Intestine	Lamina Propria Dissociation Kit	130-097-410
Liver	Liver Dissociation Kit	130-105-807
Lung	Lung Dissociation Kit	130-095-927
Muscle	Skeletal Muscle Dissociation Kit	130-098-305
Spleen	Spleen Dissociation Kit	130-095-926
N/A	Tumor Dissociation Kit	130-096-730
N/A	Multi Tissue Dissociation Kit 1	130-110-201
N/A	Multi Tissue Dissociation Kit 2	130-110-203
N/A	Multi Tissue Dissociation Kit 3	130-110-204

Cell separation mouse

NK cells

Product name	Capacity	Order no.
NK Cell Isolation Kit	1×10^9 total cells	130-115-818
CD49b (DX5) MicroBeads	2×10^9 total cells	130-052-501
Anti-NKp46 MicroBead Kit	1×10^9 total cells	130-095-390

NKT cells

Product name	Capacity	Order no.
$NK1.1^+$ iNKT Cell Isolation Kit	1×10^9 total cells	130-096-513

Order information

Place your order by fax, phone, or online!

Cell culture human

Product name	Capacity	Order no.
NK MACS® Medium	500 mL	130-114-429
NK Cell Activation/ Expansion Kit	1 kit	130-094-483
Human IL-2 IS, research grade	10 µg	130-097-742
	50 µg	130-097-743
Human IL-2 IS, premium grade	10 µg	130-097-744
	50 µg	130-097-745
	10 µg	130-097-746
	50 µg	130-097-745
Human IL-12, premium grade	5 µg	130-096-704
	25 µg	130-096-705
	100 µg	130-096-798
Human IL-15, research grade	10 µg	130-093-955
	25 µg	130-095-760
Human IL-15, premium grade	10 µg	130-095-762
	25 µg	130-095-764
	100 µg	130-095-765
	1000 µg	130-095-766
Human IL-21, research grade	10 µg	130-094-563
	25 µg	130-095-767
Human IL-21, premium grade	10 µg	130-095-768
	25 µg	130-095-769
	100 µg	130-095-784

Multiplex Assays human

Secretion assays and MACSPlex human

Product name	Order no.
MACSPlex Cytokine 12 Kit	130-099-169
MACSPlex Cytotoxic T/NK cell Kit	130-119-473
IFN-γ Secretion Assay – Detection Kit	APC 130-090-762
	FITC 130-090-433
	PE1 30-054-202
IFN-γ Secretion Assay – Cell Enrichment and Detection Kit (PE)	130-054-201

Cell culture mouse

Product name	Capacity	Order no.
Mouse IL-2, research grade	5 µg	130-094-054
	20 µg	130-094-055
	100 µg	130-098-221
	1000 µg	130-108-953
Mouse IL-12, research grade	5 µg	130-096-707
	25 µg	130-096-708
	100 µg	130-096-795
Mouse IL-15, research grade	2 µg	130-094-071
	10 µg	130-094-072
	100 µg	130-094-640
Mouse IL-21, research grade	2 µg	130-108-948
	10 µg	130-108-949

Multiplex Assays mouse

Secretion assays and MACXPlex mouse

Product name	Order no.
MACSPlex Cytokine 10 Kit	130-101-740
Mouse IFN-γ Secretion Assay – Detection Kit	APC 130-090-984
	PE1 30-090-516

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