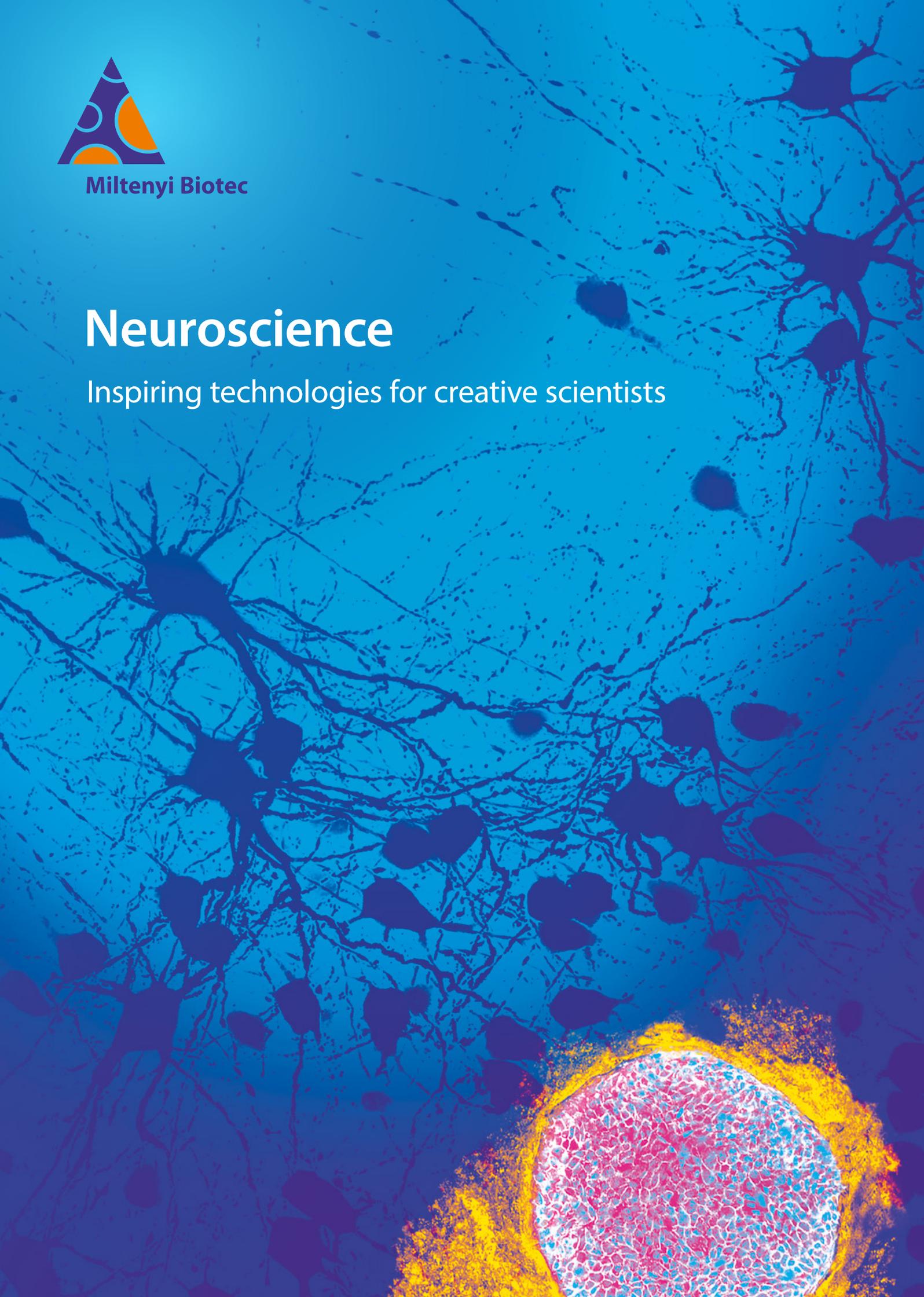




Miltenyi Biotec

Neuroscience

Inspiring technologies for creative scientists



Inspiring technologies for creative neuroscientists

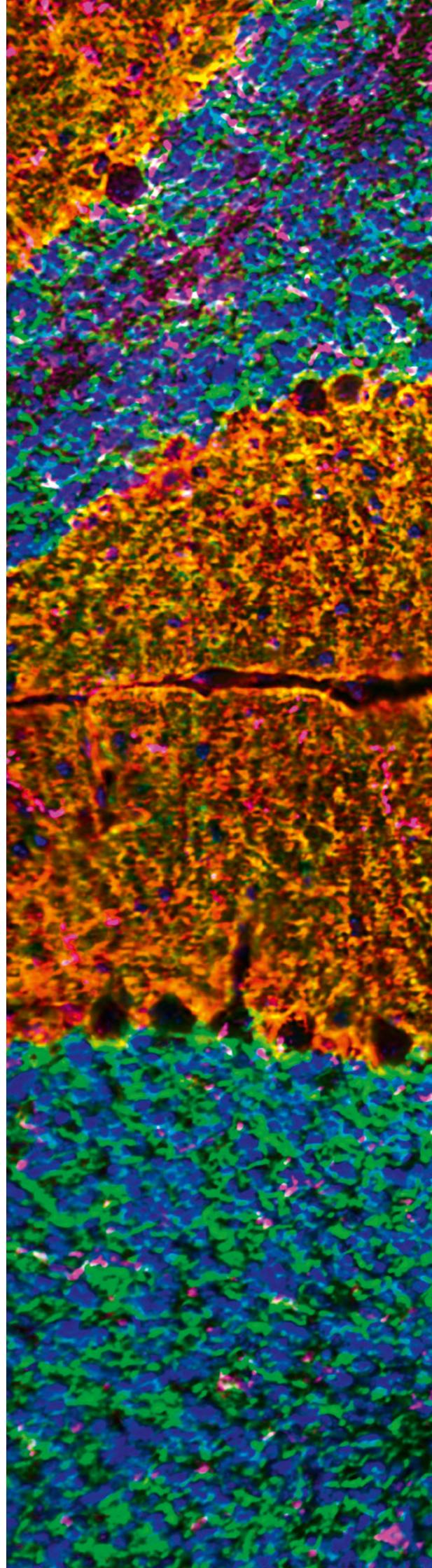
For more than 30 years, Miltenyi Biotec has worked alongside researchers around the world to develop innovative tools to support leading-edge science.

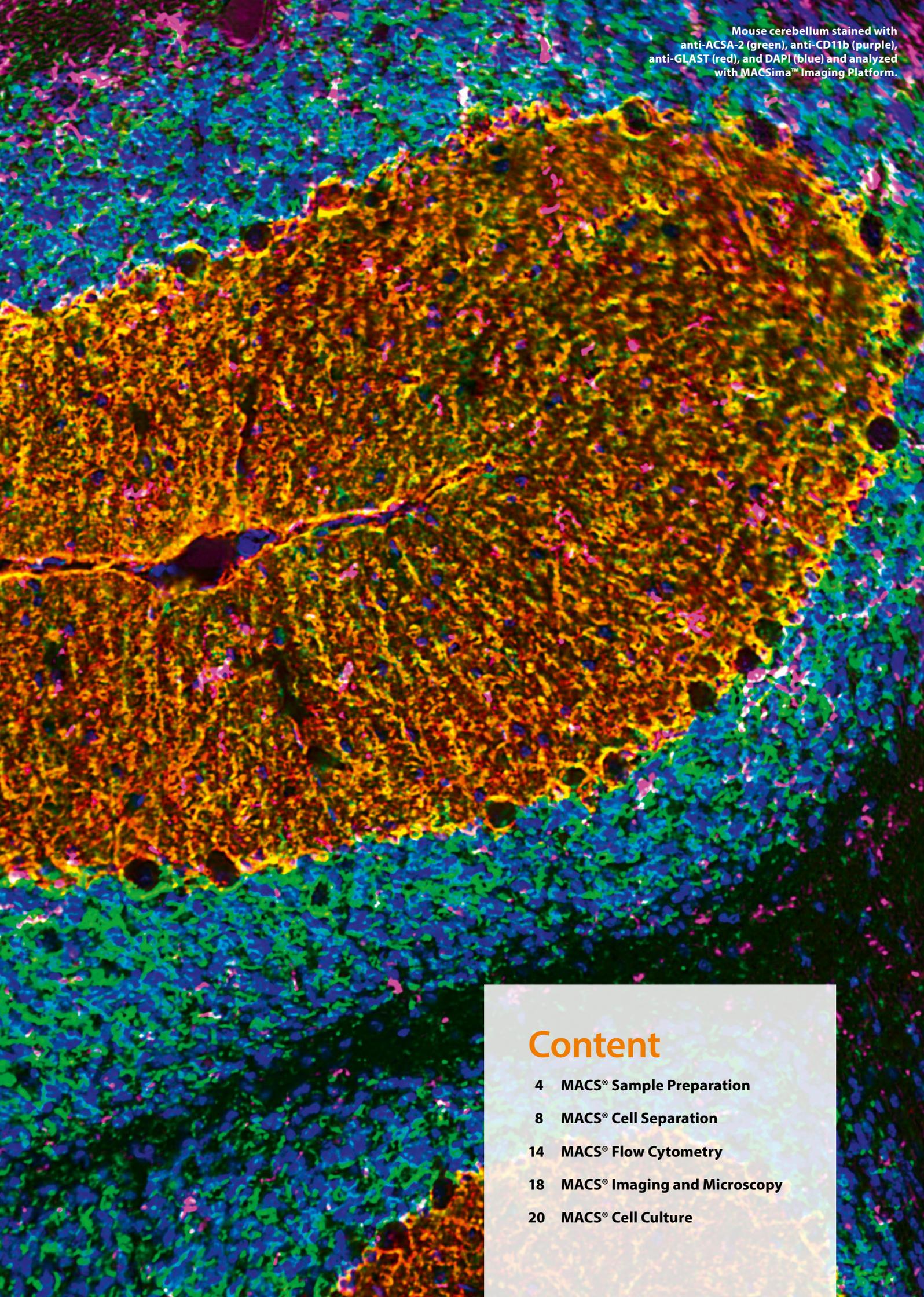
From brain tissue dissociation and myelin removal to neural cell isolation and cultivation, from flow cytometric analysis to advanced microscopy analysis, we have an attractive solution for each step of your workflow.

Taking together your talents and our tools, we've got the right ingredients to make groundbreaking research in neuroscience.

Adult brain workflow

Discover our adult brain workflow for isolation, analysis, and cultivation of neural cells from adult mouse brains.





Mouse cerebellum stained with anti-ACSA-2 (green), anti-CD11b (purple), anti-GLAST (red), and DAPI (blue) and analyzed with MACSima™ Imaging Platform.

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MACS[®] Sample Preparation

The success of an experiment relies on the quality of starting material. Our sample preparation solutions allow you to obtain pure neural cells with preserved epitope integrity.

From brain tissue to single cells

Brain dissociation

Preserve integrity and surface epitopes of primary neural cells with our MACS® Tissue Dissociation Kits and the gentleMACS™ Dissociators. The combination of enzymatic and mechanical dissociation is optimized to dissociate brain tissue effectively, while being gentle to neural cells:

- efficient walkaway tissue dissociation
- reliable, user-independent results
- high yield of viable single cells
- preserved cell integrity and surface epitopes through gentle processing protocols
- optimal sample preparation for downstream applications, including the isolation of a variety of neural cell types

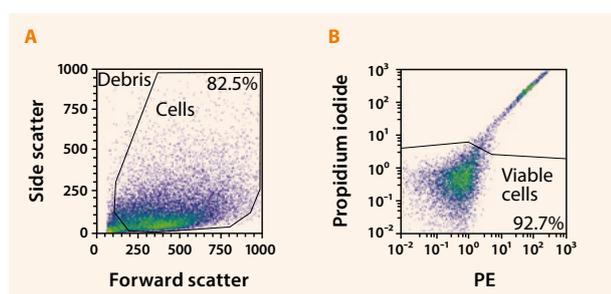


Figure 1: Standardized tissue dissociation with Neural Tissue Dissociation Kits and gentleMACS Dissociators. Mouse whole brain tissue (P4) was dissociated using the Neural Tissue Dissociation Kit (P) and the gentleMACS Dissociator Octo with Heaters. The cells were stained with Propidium iodide and analyzed with the MACSQuant® Analyzer. Flow cytometric analysis showed that the dissociated cell suspension contained minimal debris (A) and a very high percentage of viable cells (B).

VISIT 

Check our application pages that provide comprehensive product information and protocols for the four major neural cell types, neurons, astrocytes, oligodendrocytes, and microglia.

► miltenyibiotec.com/applications/neuroscience.html

Choose the specific tissue dissociation kit optimized for your starting material

Tissue dissociation kits	Starting material
Isolation of all neural cells	
Adult Brain Dissociation Kit, mouse and rat	Animal age > P7
Neural Tissue Dissociation Kit (P)	Animal age ≤ P7
Neural Tissue Dissociation Kit (T)	Animal age ≤ P7
Isolation of neurons only	
Neural Tissue Dissociation Kit – Postnatal Neurons	Animal age ≤ P7
Special applications	
Brain Tumor Dissociation Kit (P)	Brain tumor tissue
Neural Tissue Dissociation Kit (P) or (T)	PSC-derived cerebral organoids
Neurosphere Dissociation Kit (P)	Cultured neurospheres
Embryoid Body Dissociation Kit, human and mouse	<i>In vitro</i> generated embryoid bodies
Myelin Removal Beads II, human, mouse, rat	Single-cell suspensions

MACS Tissue Dissociation Kits contain either papain (P) or trypsin (T) depending on the respective epitope sensitivity. In order to find the optimal condition for your antigen of interest, refer to the table on page 10.

Dissociation of adult neural tissue

When working with neural tissue derived from animals older than postnatal day 7 (P7), large amounts of cell debris and erythrocytes often hinder downstream applications. The Adult Brain Dissociation Kit, mouse and rat comes with debris and red blood cell (RBC) removal solutions that overcome this problem (fig. 2):

- enhanced antibody binding during magnetic cell separation
- increased antibody access for more effective immunostaining, Western blotting, and flow cytometry
- better quality cell culture
- ready for downstream analysis

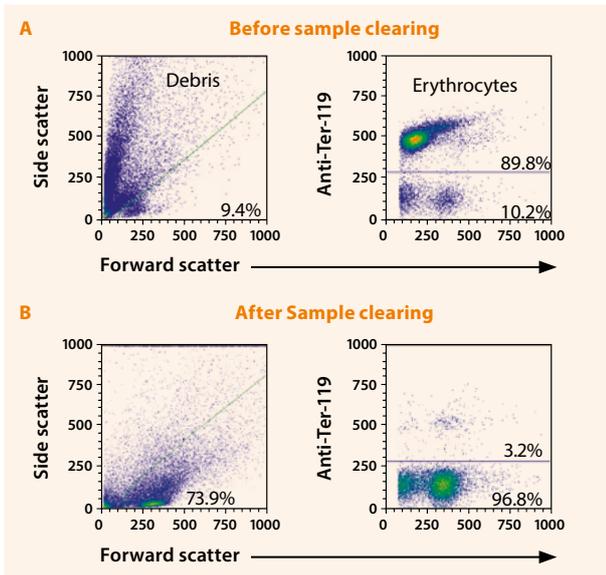


Figure 2: The Adult Brain Dissociation Kit, mouse and rat, yields highly viable and pure neural cells. The cell suspension from adult brain contains a significant amount of cell debris and erythrocytes (A), which hampers subsequent cell isolation, cultivation, and analysis. The Adult Brain Dissociation Kit, mouse and rat optimizes the tissue dissociation process, and after sample clearing, yields living cells with much less cell debris and erythrocytes (B).

Automated myelin debris removal

Are you working with up to 24 samples in parallel? Are you frustrated by lots of myelin debris that hampers your downstream applications? Myelin Removal Beads II have been developed for the specific removal of myelin debris from single-cell suspensions (tested for mouse, rat, human, and sheep samples), and are compatible with the MultiMACS™ Cell24 Separator Plus, which enables parallel processing of up to 24 samples.

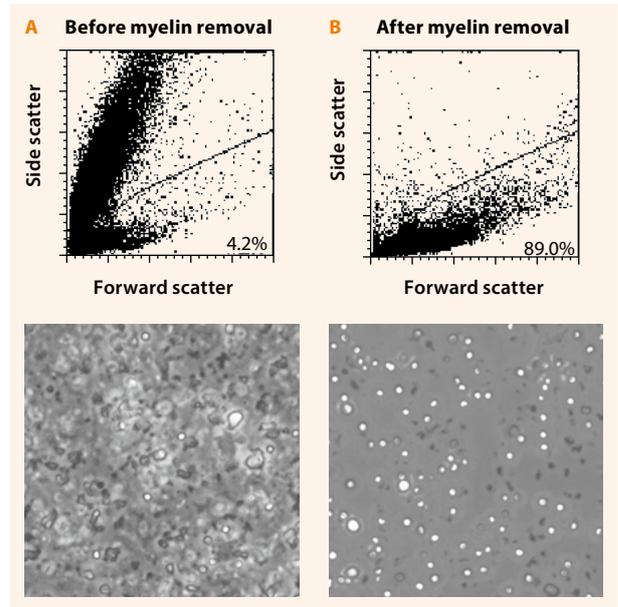
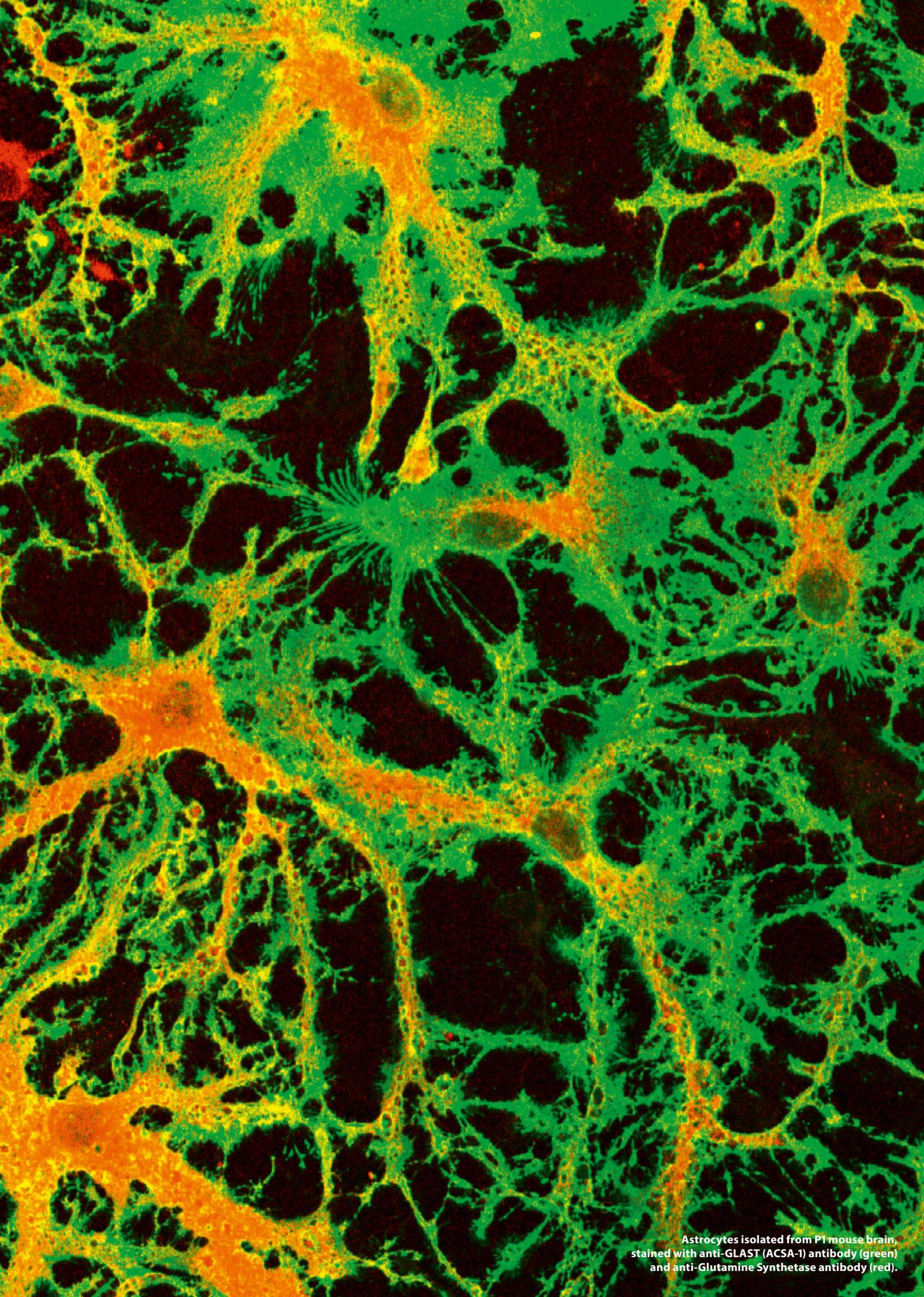


Figure 3: Myelin Removal Beads II effectively remove myelin debris from single-cell suspensions. Postnatal day 22 (P22) mouse brains were dissociated using the Neural Tissue Dissociation Kit (P) and the resulting single-cell suspensions analyzed by flow cytometry and microscopy either before (A) or after (B) treatment with Myelin Removal Beads II.



Astrocytes isolated from P1 mouse brain, stained with anti-GLAST (ACSA-1) antibody (green) and anti-Glutamine Synthetase antibody (red).



MACS[®] Cell Separation

Our unique cell separation portfolio relies on our proven magnetic cell isolation technology. Whether isolating cells in small-scale experiments or working with multiple samples in parallel – we offer manual, semi-automated, and automated solutions to meet your specific research demands.

Isolate your target neural cell population

MACS® MicroBead Technology

MACS® MicroBead Technology relies on magnetic separation of cell populations based on surface antigens:

- efficient isolation of neural cells in as little as 1 hour
- high recovery of viable cells with excellent purity
- customized cell separation using your own antibodies of any species, by indirect labeling with anti-IgG/IgM, or anti-Biotin/FITC/PE/APC MACS MicroBeads

Positive selection

With positive selection, the desired target cells are magnetically labeled and isolated as the magnetically retained fraction (fig. 4). Examples of neural cell isolation kits where this method is applied include the Anti-ACSA-2 MicroBead Kit, CD140a (PDGFR α) MicroBead Kit, mouse, and CD11b (Microglia) MicroBeads, human and mouse.

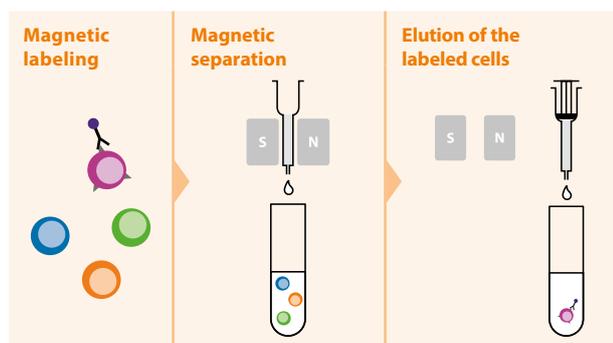


Figure 4: Positive selection with MACS Technology. Target cells are magnetically labeled. During separation, the magnetically labeled cells are retained within the column, while unlabeled cells flow through. After a washing step, the column is removed from the magnetic field of the separator and target cells are eluted from the column.

Untouched isolation

During untouched isolation, undesired cells are magnetically labelled and depleted, leaving the target cells unlabeled. This method does not require markers for the target cells and is being used, f.ex., in the Neuron Isolation Kit, mouse.

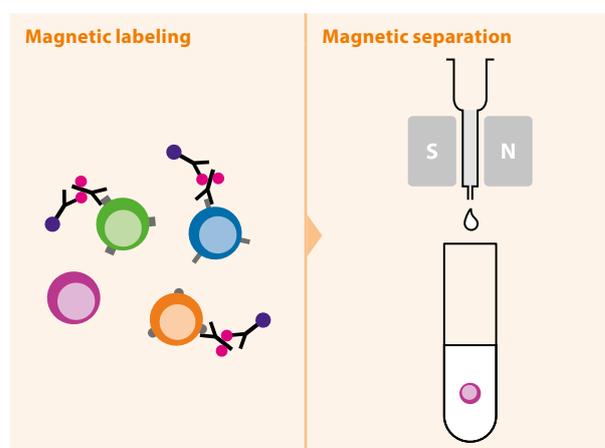


Figure 5: Untouched isolation with MACS Technology. Non-target cells are magnetically labeled. During separation, the unlabeled target cells are collected in the flow-through fraction, while non-target cells are retained within the column.

Manual and automatic separation

Our manual separators are designed for fast separation for up to eight samples in parallel. Our cell isolation instruments, the automated autoMACS® Pro Separator and the semi-automated MultiMACS™ Cell24 Separator Plus, offer flexible workflow solutions for reproducible and user-independent results.

Fast and easy isolation of neonatal neural cells

Do you spend two weeks to obtain primary neural cells from neonatal rodent brain using the “shake off” method? With our MACS® Microbead Technology in combination with Neural Tissue Dissociation Kits, you can obtain pure, viable, and functional neural cells in an hour!

Cell Isolation from neonatal brain ($\leq P7$) using Neural Tissue Dissociation Kits (NTDKs)

Cell type	Antigen / product (species)	Dissociation kit
Astrocytes	ACSA-2, mouse GLAST, human, mouse, rat	NTDK (P) or (T) NTDK (T)
Neurons	Neuron Isolation Kit, mouse CD171 (L1-CAM), human, mouse Retinal Ganglion Cell Isolation Kit, rat	NTDK – Postnatal Neurons NTDK (T) NTDK – Postnatal Neurons
Neuronal precursor cells	PSA-NCAM, human, mouse, rat	NTDK (T)
Oligodendrocyte precursor cells	NG2 (AN2), human, mouse PDGFR α (CD140a), mouse A2B5, human, mouse, rat	NTDK (P) or (T)* NTDK (P) or (T) NTDK (P) or (T)
Pre-mature Oligodendrocytes	O4, human, mouse, rat	NTDK (P) or (T)
Microglia	CD11b, human, mouse CD11b/c, rat	NTDK (P) or (T) NTDK (P) or (T)
Endothelial cells	CD31, mouse, rat	NTDK (P)
Neural precursor cells	Prominin-1, mouse CD133, human	NTDK (P) or (T) NTDK (P) or (T)

* Re-expression of antigen necessary

The Anti-ACSA-2 MicroBead Kit, mouse uses a novel astrocyte-specific monoclonal antibody developed by Miltenyi Biotec to isolate pure astrocytes (fig. 6). Due to the Papain-resistance of the ACSA-2 epitope, the Anti-ACSA-2 MicroBead Kit, mouse can be used to isolate astrocytes from cell suspensions generated from papain-treated brain tissue. In contrast, the GLAST epitope is papain-sensitive. Thus, the anti-GLAST (ACSA-1) MicroBead Kit, human, mouse, rat can only be used to isolate astrocytes from trypsin-treated cell suspensions.

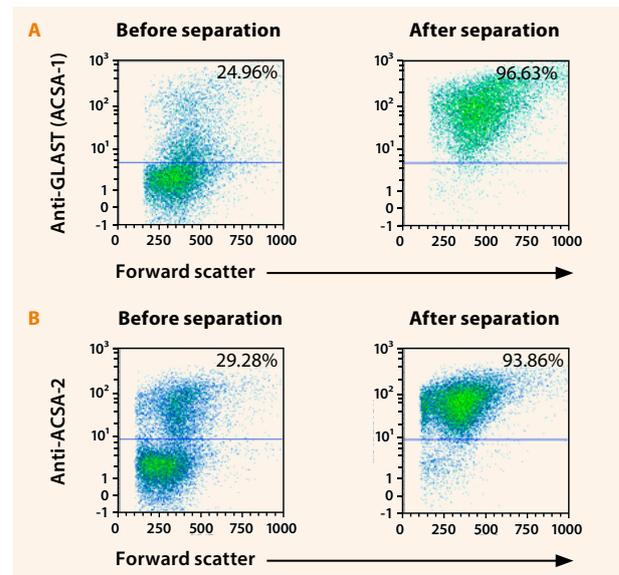


Figure 6: Isolation of neonatal astrocytes with the Anti-GLAST (ACSA-1) MicroBead Kit, human, mouse, rat or the Anti-ACSA-2 MicroBead Kit, mouse. Single-cell suspensions from P3 mouse brain tissues were prepared using the Neural Tissue Dissociation Kit (T) (A) or Neural Tissue Dissociation Kit (P) (B). Neonatal astrocytes were isolated from the single-cell suspensions using the Anti-GLAST (ACSA-1) MicroBead Kit, human, mouse, rat (A) or the Anti-ACSA-2 MicroBead Kit, mouse (B). Cells were fluorescently stained with Anti-GLAST antibodies (A) or Anti-ACSA-2 antibodies (B) and analyzed with the MACSQuant® Analyzer.

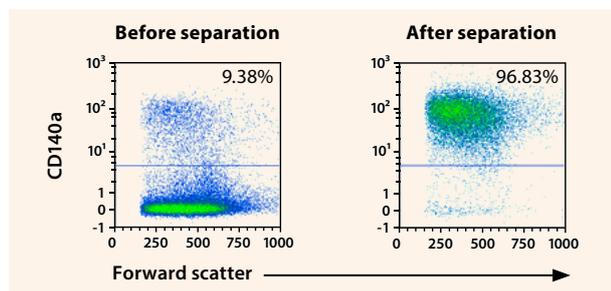


Figure 7: Isolation of oligodendrocyte precursor cells (OPCs) from neonatal mouse brain using the CD140a (PDGFR α) MicroBead Kit, mouse. A single-cell suspension from P2 mouse brain was prepared using the Neural Tissue Dissociation Kit (P) and OPCs were isolated from the single-cell suspension using the CD140a (PDGFR α) MicroBead Kit, mouse. Cells were fluorescently stained with the CD140a antibody, and analyzed with the MACSQuant[®] Analyzer.

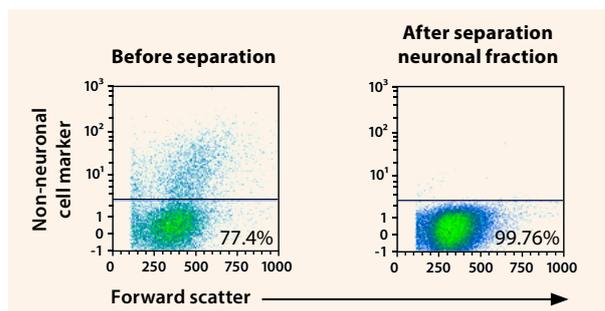


Figure 8: Isolation of neurons from neonatal mouse brain with the Neuron Isolation Kit, mouse. A single-cell suspension from P1 mouse brain was prepared using the Neural Tissue Dissociation Kit (P). Neurons were isolated with the Neuron Isolation Kit, mouse. Cells were fluorescently stained with antibodies specific for non-neuronal cell antigens, and analyzed by flow cytometry using the MACSQuant Analyzer.

VIDEO



Watch how to isolate microglia from adult mouse brain.

► [miltenyibiotec.com/microglia_isolation](https://www.miltenyibiotec.com/microglia_isolation)

VIDEO



Watch how to isolate astrocytes from mouse brain.

► [miltenyibiotec.com/astrocytes_isolation](https://www.miltenyibiotec.com/astrocytes_isolation)

Isolate adult neural cells in just half a day

Pure, viable, and functional adult neural cells provide an important tool for fully understanding neural biology and disease mechanisms, as well as performing drug screening assays. However, adult neural cells are especially sensitive and fragile, with a tight adhesion of cell bodies and thousands of synapses and fragmentations of axons and dendrites. Due to the low viability of neural cells isolated from adult brain, current primary neural cell isolation and culture are generally limited to embryonic tissue, or early postnatal stages before the formation of synapses.

Separation of adult neural cells

Our MACS® MicroBead Technology, in combination with the Adult Brain Dissociation Kit, provides a gentle technique with minimal manipulation time. It allows you to obtain pure, viable and functional adult neurons, astrocytes, microglia, oligodendrocytes, and endothelial cells in just half a day!

Cell isolation from adult brain (> P7)

Cell type	Available products
Astrocytes	Anti-ACSA-2 MicroBead Kit, mouse
Neurons	Neuron Isolation Kit, mouse
Pre-mature oligodendrocytes	Anti-O4 MicroBeads, human, mouse, rat
Microglia	CD11b (Microglia) MicroBeads, human and mouse CD11b/c (Microglia) MicroBeads, rat
Endothelial cells	CD45 MicroBeads, mouse CD31 MicroBeads, mouse

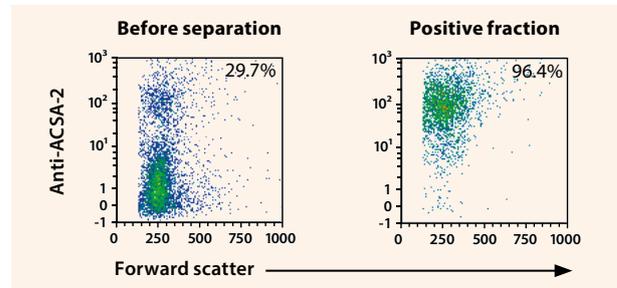


Figure 9: Isolation of adult astrocytes with the Anti-ACSA-2 MicroBead Kit, mouse. A single-cell suspension from 3-month-old mouse brain was prepared using the Adult Brain Dissociation Kit, mouse and rat. Astrocytes were isolated with the Anti-ACSA-2 MicroBead Kit, mouse, fluorescently stained with the Anti-ACSA-2 antibody, and analyzed by flow cytometry using the MACSQuant® Analyzer.

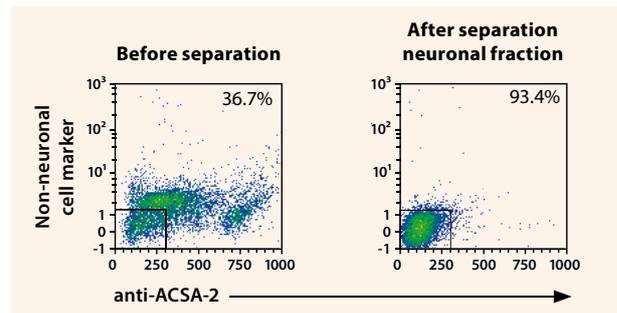


Figure 10: Isolation of neurons from adult mouse brain with Neuron Isolation Kit, mouse. A single-cell suspension from 3-month-old mouse brain was prepared using the Adult Brain Dissociation Kit, mouse and rat. Subsequently, adult neurons were isolated from the single-cell suspension with the Neuron Isolation Kit, mouse. Cells were fluorescently stained with antibodies specific for non-neuronal cell marker and the ASCA-2 antigen and analyzed by flow cytometry using the MACSQuant Analyzer.

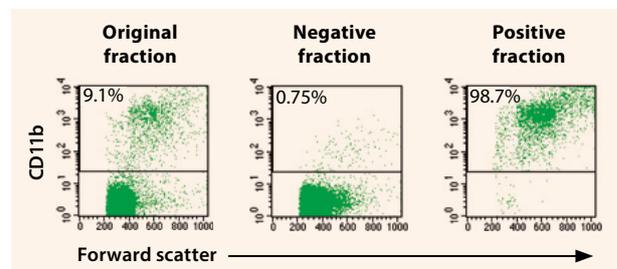
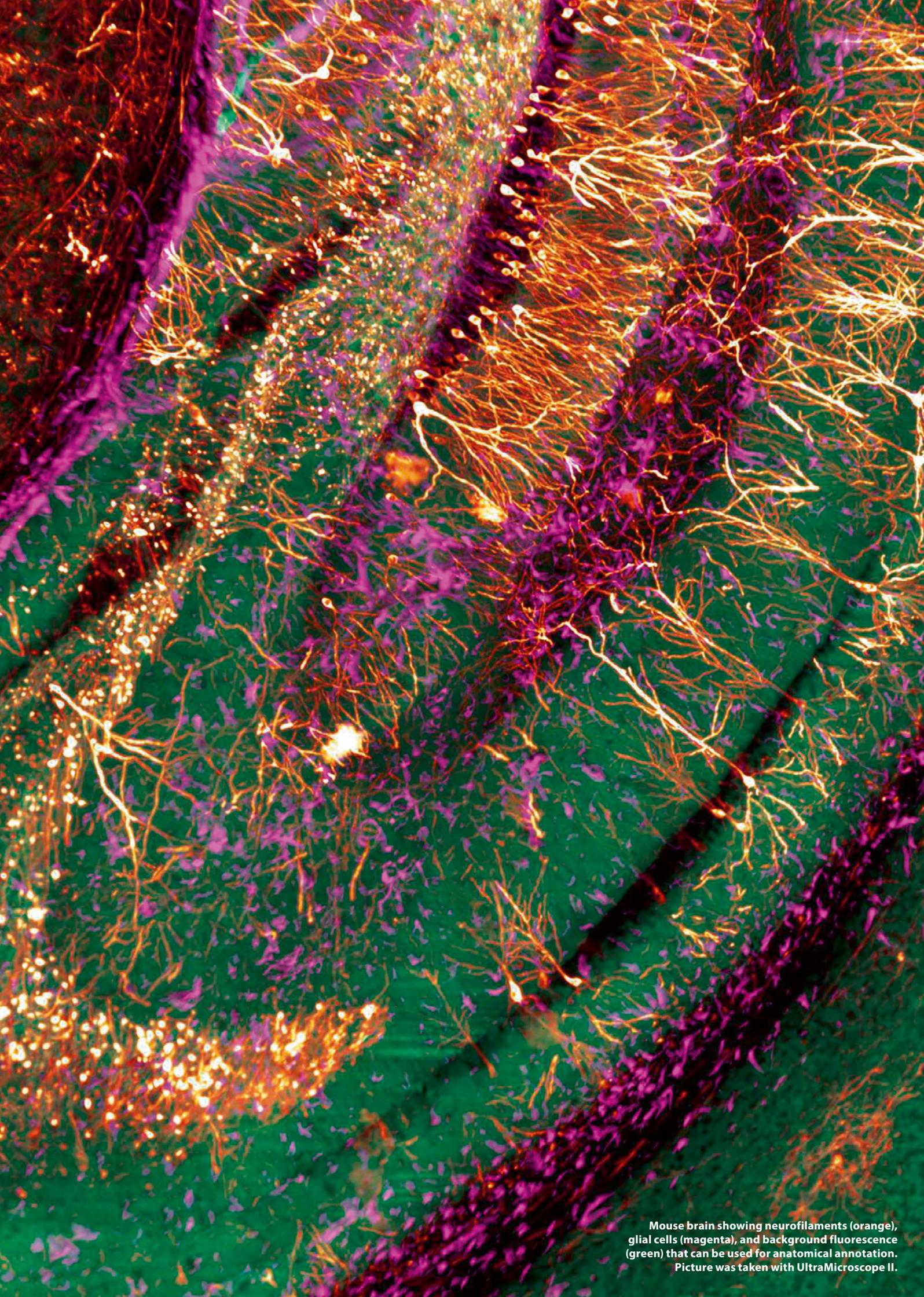


Figure 11: MACS Technology enables isolation of microglia from adult human tissue samples. Enrichment of human microglia from a glioblastoma sample achieved a purity of 99%.



Mouse brain showing neurofilaments (orange), glial cells (magenta), and background fluorescence (green) that can be used for anatomical annotation. Picture was taken with UltraMicroscope II.



MACS[®] Flow Cytometry

MACS[®] Flow Cytometry offers you a comprehensive portfolio of antibodies for advanced flow cytometry, cell sorting, and microscopy. Analyze your neural cells on a single-cell level and reduce user influence.

Cell analysis by antibody staining

Flow cytometry

A flow cytometer will measure millions of cells in seconds and enables the analysis of cell populations using multiple markers for a more accurate assessment of the whole cell population.

Complement to Western blotting

A flow cytometer can analyze proteins with quantitative analysis on a cell-by-cell basis, analyzing up to eight proteins at once rather than one at a time.

Characterization of cells and markers

Flow cytometry enables the exact quantification of cell populations and analysis of overlapping markers. Dot plots depict cells and smaller particles as dots (events) and illustrate marker expression by a shift on the respective axis.

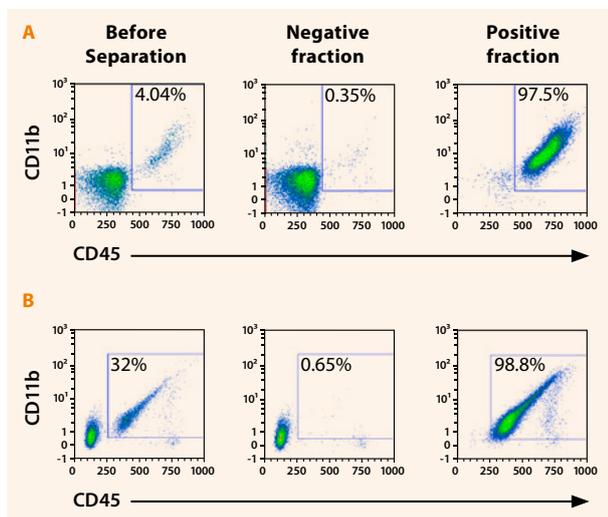


Figure 12: Isolation and characterization of microglia from neonatal and adult mouse brain. Single-cell suspensions were prepared from either P1 mouse brain using the Neural Tissue Dissociation Kit (P) (A) or from 2-month-old mouse brain using the Adult Brain Dissociation Kit, mouse and rat (B). Microglia were isolated from the single-cell suspension using CD11b (Microglia) MicroBeads, human and mouse through two MS columns. Cells were fluorescently stained with CD11b and CD45 antibodies, and analyzed by flow cytometry using the MACSQuant® Analyzer.

Microscopy

We offer an expanding portfolio of flow-validated antibodies that produce brighter staining and even better data. Choose from a growing panel of antibodies against mouse, rat, and human antigens.

Try our novel astrocyte-specific antibody Anti-ACSA-2 (astrocyte cell surface antigen-2) for your astrocyte study. This monoclonal antibody was developed by Miltenyi Biotec and is highly specific for the astrocyte cell lineage. This antibody can be used to detect both quiescent and reactive astrocytes by immunohistochemistry or flow cytometry.

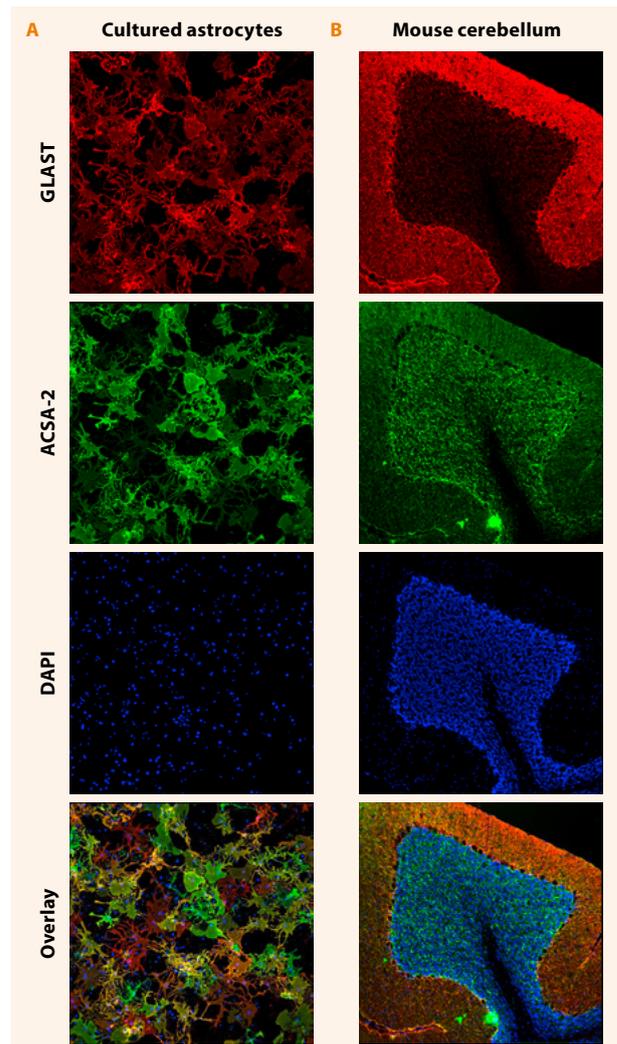


Figure 13: Co-expression of ACSA-2 and GLAST in cultured astrocytes (A) and mouse brain sections (B).

Analysis and sorting of adult neural cells

The Adult Neural Stem Cell Sorting and Analysis Kit, mouse is a 3-color antibody cocktail containing five different MACS antibodies, that ensures reliable identification of neural stem cells (NSCs) from the subventricular zone of mouse brain tissue for subsequent flow cytometry analysis or sorting.

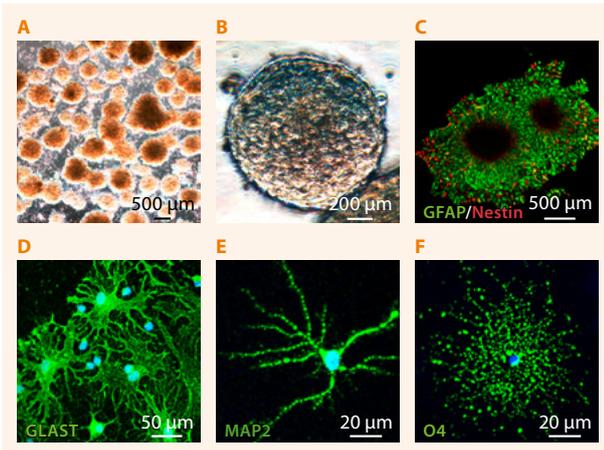


Figure 14: NSCs were sorted with the MACSQuant® Tyto® using the Adult Neural Stem Cell Sorting and Analysis Kit, mouse. Cultivation of isolated NSCs led to formation of a large number of neurospheres, which gave rise to secondary neurospheres (A, B). Neurospheres differentiated into glial cells as well as neurons as shown by expression of GFAP, Nestin, GLAST, MAP2, and O4 (C–F).

REafinity™ Antibodies

These are recombinant antibodies that provide superior lot-to-lot consistency and purity, as compared to mouse or rat monoclonal antibodies. They have been recombinantly engineered to produce highly specific antibodies that require no FcR blocking step. Additionally, they all have the same IgG1 isotype.

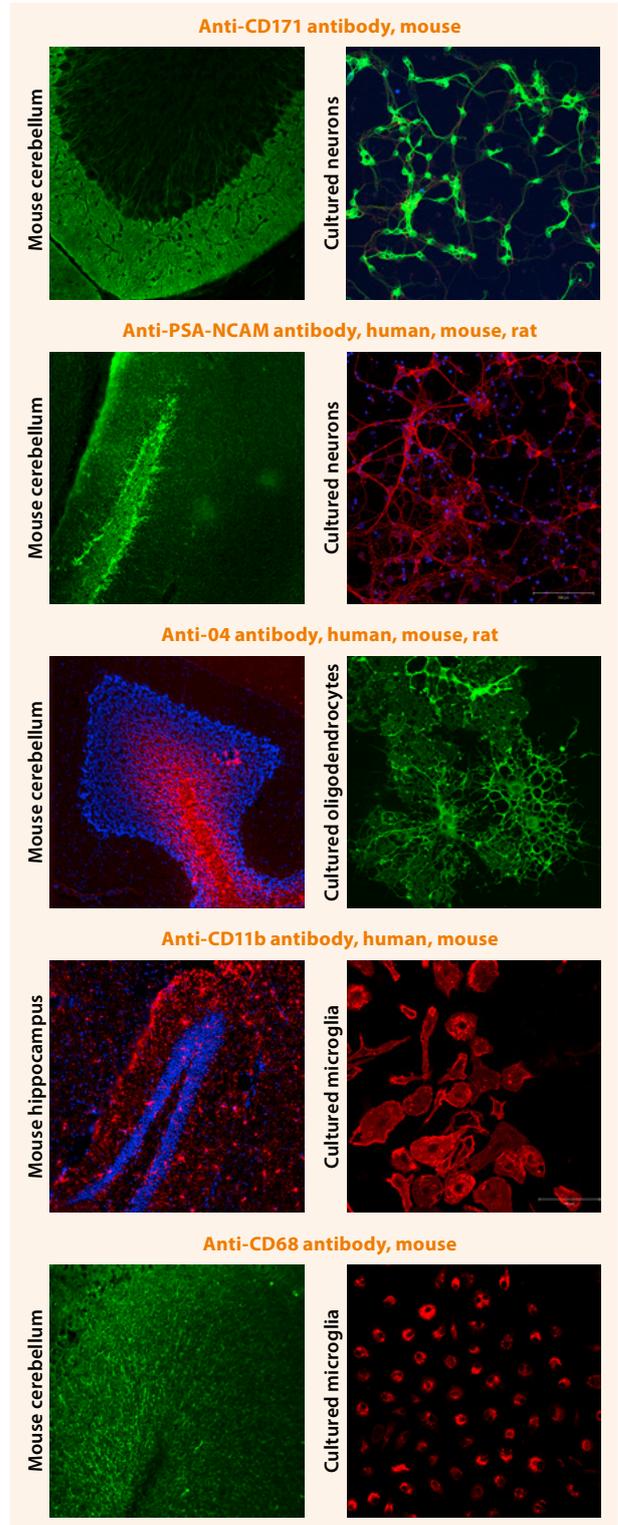
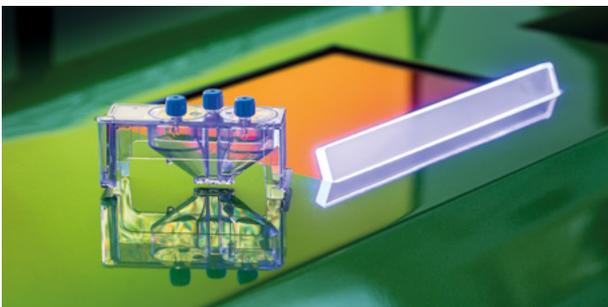


Figure 15: Microscopic analysis of cultured neurons, oligodendrocytes, and microglia, as well as of cryosections of adult mouse brain after staining with pure antibodies.

MACSQuant® Tyto® Cell Sorter

The MACSQuant® Tyto® is revolutionizing cell sorting. Our patented microchip-based technology makes sure cell sorting is super gentle without sheath fluid pressure. It opens new possibilities in basic research and medical applications with high-speed, multi-parameter flow sorting in the safety of a fully enclosed cartridge.



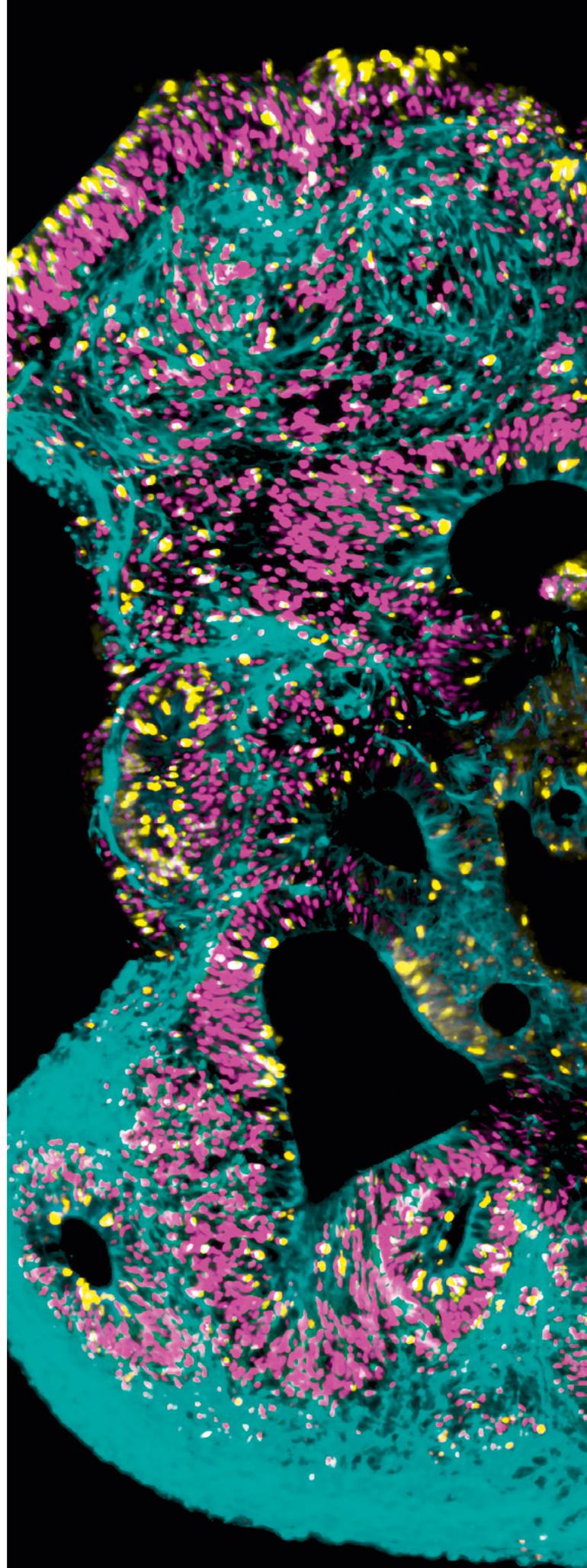
LEARN MORE 

Learn in this step-by-step protocol how to isolate pure neural stem cells (NSCs) from the subventricular zone (SVZ) of adult mouse brain.

► miltenyibiotec.com/NSC_isolation

Neural stem cell or precursor separation and analysis:

Product	Order no.
Adult Neural Stem Cell Sorting and Analysis Kit, mouse	130-121-268
Anti-Prominin-1 MicroBeads, mouse	130-092-333
Indirect CD133 MicroBead Kit, human	130-091-895
Anti-Sox1 antibodies, human (clone: REA698)	Multiple fluorochromes
Anti-Prominin-1 antibodies (MB9-3G8), mouse	Multiple fluorochromes



Brain organoid stained with anti-Ki-67 antibody (yellow), anti-βIII-Tubulin antibody (turquoise), and anti-Sox2 antibody (magenta). Picture was taken with UltraMicroscope II.



MACS[®] Imaging and Microscopy

Our growing MACS[®] Imaging and Microscopy portfolio offers versatile imaging solutions to study complex biological systems. The UltraMicroscope II light sheet microscope enables you to visualize whole biological systems in a 3D scope.

Three steps to a new view of biology

With its powerful optics, smart engineering, and user-minded operation, the UltraMicroscope II reveals a new perspective on organisms, how they are built and how they function. High-speed imaging of fragile and cleared specimens allows capturing fast biological processes and obtaining realistic three-dimensional renditions of complex biological systems.

Appropriate sample preparation is essential in this workflow. Miltenyi Biotec offers a complete portfolio of validated antibodies and antibody-fluorochrome conjugates as well as strategies for sample clearing. Get started knowing you are using the right tools to get the best results.



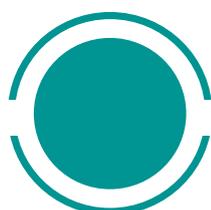
01 STAINING

Structural and functional biomolecules are (immuno-) labeled with specific fluorescent dyes, proteins, or conjugated antibodies.



02 CLEARING

Tissue-clearing methods using organic solvents or aqueous buffers render large biological samples transparent while maintaining their internal three-dimensional structure.



03 IMAGING

A single z-section of the stained sample is excited by six focused light sheets and the resulting fluorescence is recorded. The sample is moved through the focal plane, exciting fluorophores at each layer and creating 3D image stacks while keeping photodamage and bleaching to a minimum.



MACS® Cell Culture

Our cell culture portfolio offers cell culture, media supplements, and growth factors for optimal growth and long-term survival of neural cells and neural stem cells.

Culture is key

Get the best results out of your experiments by promoting the growth or differentiation of your cells *in vitro* with our MACS® Cell Culture product line for neuroscience. This product portfolio includes specially formulated cell culture media, as well as many cytokines and growth factors.

MACS® NeuroBrew®-21 Supplement and MACS Neuro Medium

- Serum-free supplement and culture medium for astrocytes, neurons, and oligodendrocytes.
- Optimized components for the propagation and long-term survival of rodent neural cells.

MACS Cytokines and Growth Factors

- Comprehensive range of cytokines for neural cell differentiation and maintenance, including human BDNF, CTNF, EGF, FGF-2, and GDNF.
- Superior quality up to GMP-grade.
- Standardized lot-specific activity provided.
- Convenient bulk fillings or cocktails available.

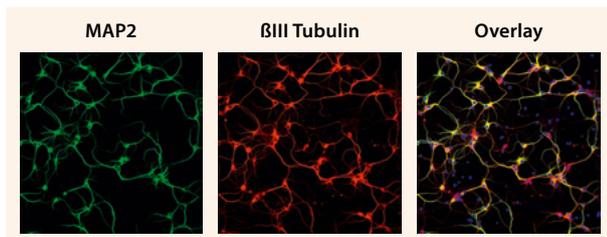


Figure 16: Culture of primary adult mouse neurons. Primary adult mouse neurons were cultured in MACS Neuro Medium, MACS NeuroBrew-21, 1% P/S, 0.5 mM L-glutamine and BDNF (incubation for 3–6 hours with 50 µg/ml BDNF at day 3) on PLL-coated glass coverslips. After 7 days cells were fixed and stained with the neuron-specific antibodies Anti-MAP2 (green) and βIII Tubulin (red).

Cultivation of astrocytes

AstroMACS Medium is a serum-free, ready-to-use media formulation for the maintenance of primary astrocytes. It ensures a high survival rate and healthy morphology of primary astrocytes from both neonatal and adult mouse and rat neural tissue, even with low seeding densities.



Figure 17: AstroMACS Medium is a serum-free, ready-to-use media formulation for the maintenance of primary astrocytes.

AstroMACS Separation Buffer is a PBS-based buffer optimized for dead cell removal during adult astrocyte isolation. We highly recommend using AstroMACS Separation Buffer for optimal results of adult astrocyte cultivation.

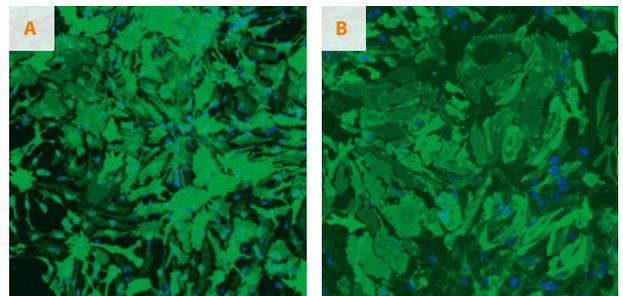


Figure 18: Culture of neonatal and adult astrocytes in AstroMACS Medium. (A) Neonatal astrocytes were isolated from P4 mice using the Neural Tissue Dissociation Kit (P) and the Anti-ACSA-2 MicroBead Kit, and cultured in AstroMACS Medium at a density of 10,000 cells/well in a 24-well imaging plate for seven days. Cells were then fixed and stained with Anti-GLAST antibody (green) and DAPI (blue). (B) Adult astrocytes were isolated from the brain of 8-week-old mice using the Adult Brain Dissociation Kit and the Anti-ACSA-2 MicroBead Kit in combination with the AstroMACS Separation Buffer. Cells were then cultivated in AstroMACS Medium at a density of 100,000 cells/well in a 24-well imaging plate for seven days. Cells were fixed and stained with Anti-GLAST antibody (green) and DAPI (blue).

Culture of iPSC-derived neural cells

StemMACS™ iPS-Brew XF is a xeno-free cell culture medium for the maintenance and expansion of human pluripotent stem cells under feeder-free conditions. It supports rapid adaption of feeder-based cell cultures to a feeder-free environment and is compatible with commonly used cell attachment matrices. Experience robust expansion of human embryonic stem (ES) cells or induced pluripotent stem (iPS) cells over multiple passages while maintaining a pluripotent phenotype as well as pluripotent differentiation potential.

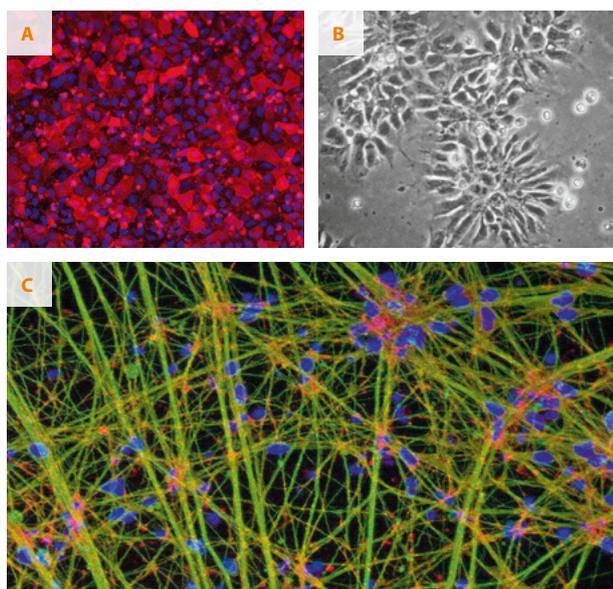


Figure 19: Efficient derivation of human neurons from induced pluripotent stem cells (iPSCs). (A) iPSCs, which grow as confluent monolayer in StemMACS iPS-Brew XF, stain positive for TRA-1-60. (B) A homogenous neuroepithelial layer is formed after neural induction with MACS Neuro Medium, MACS NeuroBrew-21, StemMACS A83-01, StemMACS LDN-193189, N2-Supplement, and DMEM-F12. (C) Immunofluorescence staining for synaptophysin (red) visualizes synapses on β III tubulin (green) positive iPSC derived neurons differentiated for 8 weeks in MACS Neuro Medium, MACS NeuroBrew-21, N2-Supplement, and DMEM-F12 (data courtesy of Dr. Julia Ladewig, Neural Development Group, Institute of Reconstructive Neurobiology, University of Bonn, Germany).

Sample preparation

Product	Order no.
gentleMACS™ Dissociator	130-093-235
gentleMACS Octo Dissociator	130-095-937
gentleMACS Octo Dissociator with Heaters	130-096-427
gentleMACS C Tubes	130-093-237
Adult Brain Dissociation Kit, mouse and rat	130-107-677
Neural Tissue Dissociation Kit (P)	130-092-628
Neural Tissue Dissociation Kit (T)	130-093-231
Neural Tissue Dissociation Kit – Postnatal Neurons	130-094-802
Myelin Removal Beads II, human, mouse, rat	130-096-733
Brain Tumor Dissociation Kit (P)	130-095-942
Neurosphere Dissociation Kit (P)	130-095-943

Microglia separation and analysis

Product	Order no.
CD11b (Microglia) MicroBeads, human and mouse	130-093-634
CD11b/c (Microglia) MicroBeads, rat	130-105-634
CD11b pure, human and mouse (clone: M1/70.15.11.5)	130-115-811
CD68 pure, mouse (clone: FA-11)	130-115-808
CD11b, human and mouse (clone: M1/70.15.11.5)	Multiple fluorochromes
CD11b, mouse (clone: REA592)	Multiple fluorochromes
CD11b, human (clone: REA713)	Multiple fluorochromes
CD11b/c, rat (clone: REA325)	Multiple fluorochromes
CD68, mouse (clone: FA-11)	Multiple fluorochromes
CD68, human (clone: Y1/82A)	Multiple fluorochromes
CD68, rat (clone: REA237)	Multiple fluorochromes
Anti-F4/80, mouse (clone: REA126)	Multiple fluorochromes
Anti-MHC Class II, mouse (clone: M5/114.15.2)	Multiple fluorochromes
MACSplex Cytokine 12 Kit, human	130-099-169
MACSplex Cytokine 10 Kit, mouse	130-101-740

Astrocyte separation and analysis

Product	Order no.
Anti-ACSA-2 MicroBead Kit, mouse	130-097-678
Anti-GLAST (ACSA-1) MicroBead Kit, human, mouse, rat	130-095-826
Astrocyte Isolation Starter Kit, rat < P7	130-096-052
Astrocyte Isolation Starter Kit, mouse < P7	130-096-054
AstroMACS Separation Buffer	130-117-336
Anti-ACSA-2 pure, mouse (clone: IH3-18A3)	130-099-138
Anti-GLAST (ACSA-1) pure, human, mouse, rat (clone: ACSA-1)	130-095-822
Anti-GFAP pure, human, mouse, rat (clone: REA335)	130-105-140
Anti-ACSA-2, mouse (clone: IH3-18A3)	Multiple fluorochromes
Anti-ACSA-2, mouse (clone: REA969)	Multiple fluorochromes
Anti-GLAST (ACSA-1), human, mouse, rat	Multiple fluorochromes
Anti-GFAP, human, mouse, rat (clone: REA335)	Multiple fluorochromes

Neuronal cell separation and analysis

Product	Order no.
Neuron Isolation Kit, mouse	130-115-389
CD171 (L1CAM) MicroBead Kit, mouse	130-101-549
Retinal Ganglion Cell Isolation Kits, rat	130-096-209
Anti-PSA-NCAM MicroBeads, human, mouse, rat	130-092-966
Anti-PSA-NCAM pure, human, mouse, rat (clone: 2-2B)	130-115-809
CD171 (L1CAM) pure, mouse (clone: 555)	130-115-812
CD171 (L1CAM) antibodies (clone: 555)	Multiple fluorochromes
CD171 (L1CAM) antibodies, human (clone: REA163)	Multiple fluorochromes
CD271 (LNGFR) antibodies, human and mouse (clone: REA648)	Multiple fluorochromes
Anti-TrkA (NTRK1)-PE, human (clone: REA430)	130-117-705
Anti-PSA-NCAM, human, mouse, rat (clone: 2-2B)	Multiple fluorochromes
Anti-PAX-6 pure, human (clone: REA507)	130-107-582

Oligodendrocyte separation and analysis

Product	Order no.
CD140a (PDGFR α) MicroBead Kit, mouse	130-101-502
Anti-AN2 MicroBeads, human and mouse	130-097-170
Anti-A2B5 MicroBeads, human, mouse, rat	130-093-388
Anti-O4 MicroBeads, human, mouse, rat	130-094-543
Myelin Isolation Beads, human, mouse, rat	130-104-257
Anti-O4 pure, human, mouse, rat (clone: O4)	130-115-810
CD140a antibodies, mouse (clone: APA5)	Multiple fluorochromes
CD140a antibodies, mouse (clone: REA637)	Multiple fluorochromes
Anti-AN2 antibodies, human and mouse (clone: REA989)	Multiple fluorochromes
Anti-AN2 antibodies, human and mouse (clone: 1E6.4)	Multiple fluorochromes
Anti-A2B5 antibodies, human, mouse, rat (clone 105HB29)	Multiple fluorochromes
Anti-O4 antibodies, human, mouse, rat (clone: REA576)	Multiple fluorochromes
Anti-O4 antibodies, human, mouse, rat (clone: O4)	Multiple fluorochromes

Cell culture and stimulation

Product	Order no.
MACS [®] NeuroBrew [®] -21	130-093-566
MACS NeuroBrew-21 w/o Vitamin A	130-097-263
MACS Neuro Medium	130-093-570
AstroMACS Medium	130-117-031
Human BDNF, research grade	Multiple sizes
Human GDNF, research grade	Multiple sizes
Human NT-3, research grade	Multiple sizes
Human NT-4, research grade	Multiple sizes
Human CNTF, research grade	Multiple sizes
Human PDGF-AA, research grade	Multiple sizes
Human FGF-2 IS, premium grade	Multiple sizes
Human FGF-2 IS, research grade	Multiple sizes
Human FGF-2, premium grade	Multiple sizes
Human FGF-2, research grade	Multiple sizes
Mouse FGF-2, research grade	Multiple sizes
StemMACS [™] iPS-Brew XF, human	130-104-368



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