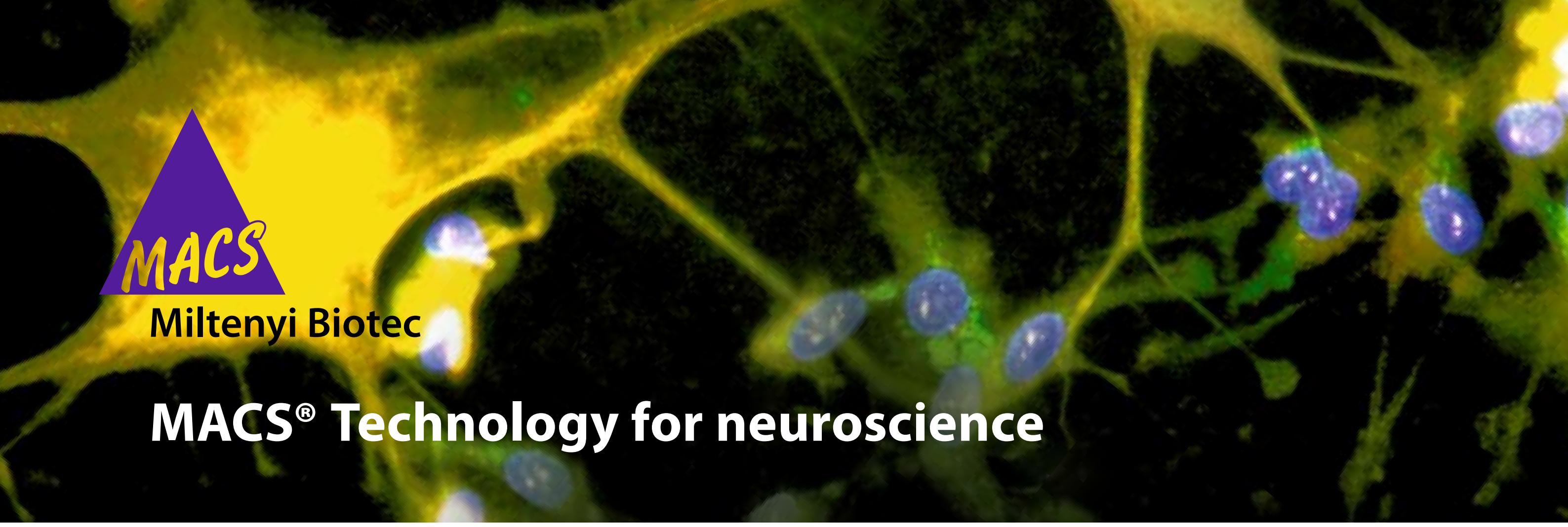


# MACS® Technology for neuroscience

## Neural stem cells — CD133

### Human

Griffero, F. *et al.* (2009) Different response of human glioma tumor-initiating cells to EGFR kinase inhibitors. J. Biol. Chem. 284(11): 7138–7148.

Pfenninger, C.V. *et al.* (2007) CD133 is not present on neurogenic astrocytes in the adult subventricular zone, but on embryonic neural stem cells, ependymal cells, and glioblastoma cells. Can. Res. 67: 5727–5736.

Pruszak, J. *et al.* (2007) Markers and methods for cell sorting of human embryonic stem cell–derived neural cell populations. Stem Cells 25: 2257–2268.

Hall, P.E. *et al.* (2006) Integrins are markers of human neural stem cells. Stem Cells 24: 2078–2084.

Belicchi, M. *et al.* (2004) Human skin-derived stem cells migrate throughout forebrain and differentiate into astrocytes after injection into adult mouse brain. J. Neurosci. Res. 77: 475–486.

Yu, S. *et al.* (2004) Isolation and characterization of the $CD133^+$ precursors from the ventricular zone of human fetal brain by magnetic affinity cell sorting. Biotech. Letters 26: 1131–1136.

Tamaki, S. *et al.* (2002) Engraftment of sorted/expanded human central nervous system cells from fetal brain. J. Neurosci. Res. 69: 976–986.

Uchida, N. *et al.* (2000) Direct isolation of human central nervous system stem cells. Proc. Natl. Acad. Sci. USA 97: 14720–14725.

## Neural stem cells — CD15 (LeX)

### Rat

Liu, L. *et al.* (2006) Extracellular signal–regulated kinase (ERK) 5 is necessary and sufficient to specify cortical neuronal fate. Proc. Natl. Acad. Sci. USA 103: 9697–9702.

## Cancer stem cells

### Human

Blazek, E. *et al.* (2007) Daoy medulloblastoma cells that express CD133 are radioresistant relative to CD133-cells, and the $CD133^+$ sector is enlarged by hypoxia. Int. J. Radiat. Oncol. Biol. Phys. 67(1): 1–5.

Pruszak, J. *et al.* (2007) Markers and methods for cell sorting of human embryonic stem cell–derived neural cell populations. Stem Cells 25: 2257–2268.

Bao, S. *et al.* (2006) Stem cell–like glioma cells promote tumor angiogenesis through vascular endothelial growth factor. Can. Res. 66: 7843–7848.

Calabrese, J. *et al.* (2005) Radial glia cells are candidate stem cells of ependymoma. Cancer Cell 8: 323–35.

Singh, S.K. *et al.* (2004) Identification of human brain tumour initiating cells. Nature 432: 396–401.

Singh, S.K. *et al.* (2004) Cancer stem cells in nervous system tumors. Oncogene 23: 7267–7273.

Singh, S.K. *et al.* (2003) Identification of a cancer stem cell in human brain tumors. Can. Res. 63: 5821–5828.

## Glial progenitors — A2B5

### Human

Windrem, M.S. *et al.* (2008) Neonatal chimerization with human glial progenitor cells can both remyelinate and rescue the otherwise lethally hypomyelinated shiverer mouse. Cell Stem Cell 2(6): 553–565.

Kuhlmann, T. *et al.* (2008) Differentiation block of oligodendroglial progenitor cells as a cause for remyelination failure in chronic multiple sclerosis. Brain 131: 1749–1758.

Windrem, M.S. *et al.* (2004) Fetal and adult human oligodendrocyte progenitor cell isolates myelinate the congenitally dysmyelinated brain. Nature Med. 10: 93–97.

Ruffini, F. *et al.* (2004) Distinctive properties of human adult brain-derived myelin progenitor cells. Am. J. Pathol. 165: 2167–2175.

### Mouse

Rao, R.C. *et al.* (2008) Efficient serum-free derivation of oligodendrocyte precursors from neural stem cell–enriched cultures. Stem Cells 27(1): 116–125.

Larsen, P.H. *et al.* (2006) Myelin formation during development of the CNS is delayed in matrix metalloproteinase-9 and -12 null mice. J. Neurosc. 26: 2207–2214.

Seidenfaden, R. *et al.* (2006) Glial conversion of SVZ-derived committed neuronal precursors after ectopic grafting into the adult brain. Mol. Cell. Neurosci. 32: 187–198.

Larsen, P.H. *et al.* (2004) The expression of matrix metalloproteinase-12 by oligodendrocytes regulates their maturation and morphological differentiation. J. Neurosc. 24: 7597–7603.

### Rat

Liu, A. *et al.* (2007) The glial or neuronal fate choice of oligodendrocyte progenitors is modulated by their ability to aquire an epigenetic memory. J. Neurosci. 27: 7339–7343.

Strathmann, F.G. *et al.* (2007) Identification of two novel glial-restricted cell populations in the embryonic telencephalon arising from unique origins. BMC Dev. Biol. 7: 33.

Larsen, P.H. *et al.* (2003) Matrix metalloproteinase-9 facilitates remyelination in part by processing the inhibitory NG2 proteoglycan. J. Neurosc. 23: 11127–11135.

## Glial progenitors — NG2

### Human

Chekenya, M. *et al.* (1999) The NG2 chondroitin sulfate proteoglycan: role in malignant progression of human brain tumors. Int. J. Dev. Neurosci. 17: 421–435.

### Rat

Liu, A. *et al.* (2007) The glial or neuronal fate choice of oligodendrocyte progenitors is modulated by their ability to aquire an epigenetic memory. J. Neurosci. 27: 7339–7343.

## Neuronal progenitor cells — PSA-NCAM

### Mouse

Seidenfaden, R. *et al.* (2006) Glial conversion of SVZ-derived committed neuronal precursors after ectopic grafting into the adult brain. Mol. Cell Neurosci. 32: 187–98.

Cayre, M. *et al.* (2006) Migrating and myelinating potential of subventricular zone neural progenitor cells in white matter tracts of the adult rodent brain. Mol. Cell Neurosci. 31(4): 748–758.

### Rat

Strathmann, F.G. *et al.* (2007) Identification of two novel glial-restricted cell populations in the embryonic telencephalon arising from unique origins. BMC Dev. Biol. 7: 33.

Widera, D. *et al.* (2006) Tumor necrosis factor α triggers proliferation of adult neural stem cells via IKK/NF-κB signalling. BMC Neurosci. 7: 64.

Marmur, R. *et al.* (1998) Differentiation of oligodendroglial progenitors derived from cortical multipotent cells requires extrinsic signals including activation of gp130/LIFβ Receptors. J. Neurosci. 23: 9800–9811.

## Neural crest cells — CD271 (LNGFR)

### Rat

Chalazonitis, A. *et al.* (1998) Age-dependent differences in the effects of GDNF and NT-3 on the development of neurons and glia from neural crest–derived precursors immunoselected from the fetal rat gut: expression of GFRa-1 *in vitro* and *in vivo*. Dev. Biol. 204: 385–406.

Chalazonitis, A. *et al.* (1998) Promotion of the development of enteric neurons and glia by neuropoietic cytokines: interactions with Neurotrophin-3. Dev. Biol. 98: 343–365.

## Astrocytes (RAN2)

### Rat

Marmur, R. *et al.* (1998) Differentiation of oligodendroglial progenitors derived from cortical multipotent cells requires extrinsic signals including activation of gp130/LIFβ Receptors. J. Neurosci. 23: 9800–9811.

## Retinal ganglion cells — CD90

### Rat

Kerrison, J.B. *et al.* (2005) Bone morphogenetic proteins promote neurite outgrowth in retinal ganglion cells. Mol. Vis. 11: 208–15.

Wu, D.Y. *et al.* (2003) PKC isozymes in the enhanced regrowth of retinal neurites after optic nerve injury. Invest. Ophthalmol. Vis. Sci. 44: 2783–2790.

Tsumamoto, Y. *et al.* (2002) *In situ* localization of nitric oxide synthase and direct evidence of NO production in rat retinal ganglion cells. Brain Res. 933: 118–29.

Mukai, S. *et al.* (2002) Existence of ionotropic glutamate receptor subtypes in cultured rat retinal ganglion cells obtained by the magnetic cell sorter method and inhibitory effects of 20-hydroxyecdysone, a eurosteroid, on the glutamate response. Jpn. J. Pharmacol. 89: 44–52.

Shoge, K. *et al.* (1999) Rat retinal ganglion cells culture enriched with the magnetic cell sorter. Neurosci. Lett. 259: 111–114.

## Motor neurons — CD271 (LNGFR)

### Mouse

Arce, V. *et al.* (1999) Cardiotrophin-1 requires LIFR β to promote survival of mouse motoneurons purified by a novel technique. Neurosci. Res. 55: 119–126.

### Mouse and rat

Raoul, C. *et al.* (1999) Programmed cell death of embryonic motoneurons triggered through the Fas death receptor. J. Cell Biol. 147: 1049–1061.

### Rat

Garcès, A. *et al.* (2001) Responsiveness to neurturin of subpopulations of embryonic rat spinal motoneuron does not correlate with expression of GFR1 or GFR2. Dev. Dyn. 220: 189–197.

Garcès, A. *et al.* (2000) GFR1 is required for development of distinct subpopulations of motoneuron. J. Neurosci. 20: 4992.

## Schwann cells

### Mouse

Manent, J. *et al.* (2003) Magnetic cell sorting for enriching Schwann cells from adult mouse peripheral nerves. J. Neurosci. Meth. 123: 167–173.

### Rat

Vroemen, M. and Weidner, N. (2003) Purification of Schwann cells by selection of p75 low affinity nerve growth factor receptor expressing cells from adult peripheral nerve. J. Neurosci. Meth. 124: 135–143.

## Microglia — CD11b

### Mouse

Lee, J-K. *et al.* (2008) Regulator of G-protein signaling 10 promotes dopaminergic neuron survival via regulation of the microglial inflammatory response. J. Neurosci. 28(34): 8517–8528.

Marek, R. *et al.* (2008) Magnetic cell sorting: a fast and effective method of concurrent isolation of high purity viable astrocytes and microglia from neonatal mouse brain tissue. J. Neurosci. Methods 175(1): 108–118.

Hickman, S.E. *et al.* (2008) Microglial dysfunction and defective beta-amyloid clearance pathways in aging Alzheimer's disease mice. J. Neurosci. 28(33): 8354–8360.

Boddaert, J. *et al.* (2007) Evidence of a role for lactadherin in Alzheimer's disease. Am. J. Pathol. 170: 921–929.

Li, H. *et al.* (2006) Different neurotropic pathogens elicit neurotoxic CCR9- or neurosupportive CXCR3-expressing microglia. J. Immunol. 177: 3644–3656.

Ndhlovu, L.C. *et al.* (2001) Critical involvement of OX40 ligand signals in the T cell priming events during experimental autoimmune encephalomyelitis. J. Immunol. 167: 2991–2999.

Schluter, D. *et al.* (2001) Regulation of microglia by $CD4^+$ and $CD8^+$ T cells: Selective analysis in CD45-congenic normal and toxoplasma gondii-infected bone marrow chimeras. Brain Path. 11(1): 44–55.

## Immune cells from brain parenchyma

### Mouse

Liu, M.T. *et al.* (2001) Neutralization of the chemokine CXCL10 reduces inflammatory cell invasion and demyelination and improves neurological function in a viral model of multiple sclerosis. J. Immunol. 167: 4091–4097.

## Endothelial cells from cerebral cortex

### Rat

Demeule, M. *et al.* (2001) Isolation of endothelial cells from brain, lung and kidney: expression of the multidrug resistance P-glycoprotein isoforms. Biochem. Biophy. Res. Comm. 281: 827–834.

## mRNA isolations from brain

### Mouse

Okajima, T. *et al.* (1999) Molecular cloning of brain-specific GD1a synthase (ST6GalNAc V) containing CAG/Glutamine repeats. J. Biol. Chem. 274: 30557–30562.

Okajima, T. *et al.* (2000) Molecular cloning and expression of mouse GD1a/GT1aa/GQ1ba synthase (ST6GalNAc VI) gene. J. Biol. Chem. 275: 6717–6723.

## Magnetic resonance imaging

### Mouse

Sykova, E. and Jendelova, P. (2005) Magnetic resonance tracking of implanted adult and embryonic stem cells in injured brain and spinal cord. Ann. N. Y. Acad. Sci. 1049: 146–160.

Pirko, I. *et al.* (2003) *In vivo* magnetic resonance imaging of immune cells in the central nervous system with superparamagnetic antibodies. FASEB J. 18: 179–182.

## Neural Tissue Disociation Kit

Skog, J. *et al.* (2008) Glioblastoma microvesicles transport RNA and proteins that promote tumour growth and provide diagnostic biomarkers. Nat. Cell Biol. 10(12): 1470–1476.

Hardt, O. *et al.* (2008) Gene expression analysis defines differences between region-specific GABAergic neurons. Mol. Cell Neurosci. 39(3): 418–428.

Lee, J-K. *et al.* (2008) Regulator of G-protein signaling 10 promotes dopaminergic neuron survival via regulation of the microglial inflammatory response. J. Neurosci. 28(34): 8517–8528.

Meylan, F. *et al.* (2008) The TNF-family receptor DR3 is essential for diverse T cell–mediated inflammatory diseases. Immunity 29(1): 79–89.

Környei, Z. *et al.* (2007) Astroglia-derived retinoic acid is a key factor in glia-induced neurogenesis. FASEB 21: 2496–2509.

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