



Miltenyi Biotec



MACS® NeuroBrew®-21

Supplements for serum-free neural cell cultivation

MACS® NeuroBrew®-21 Supplements are optimized for *in vitro* cultivation of mature neural cells of the central and peripheral nervous system, or neural stem cells of primary or ES/iPS cell origin. They come in two formulations, with or without Vitamin A.

- **For neonatal and adult neural cells**
- **For maintenance and differentiation of neural progenitors and stem cells**

► miltenyibiotec.com/neurobrew

Improved performance

MACS® NeuroBrew®-21 provides essential nutrients for optimal growth and long-term viability of neural cells.

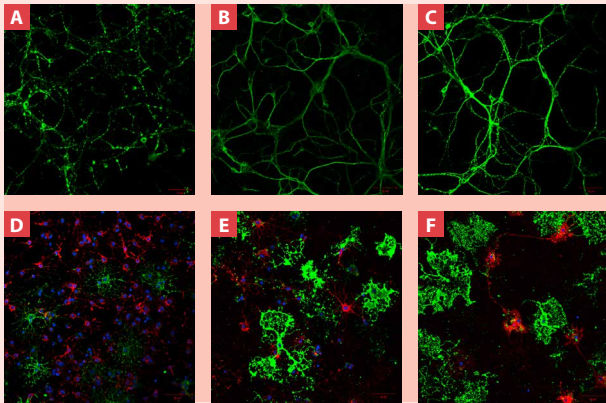


Figure 1: Long-term cultivation of primary neurons and oligodendrocytes from neonatal mouse brain in MACS Neuro Medium and MACS NeuroBrew-21. Neurons were fixed after 1 week (A), 2 weeks (B), and 3 weeks (C) of culture and stained with MAP2 in green. Oligodendrocytes were fixed after 3 days (D), 1 week (E), and 2 weeks (F) of culture and stained with AN2 in red, O1 in green, and DAPI in blue.

Maintain neural stem cells or induce neural differentiation

MACS NeuroBrew-21 comes in two formulations, with and without Vitamin A (retinyl acetate), which induces the differentiation of neural stem cells.

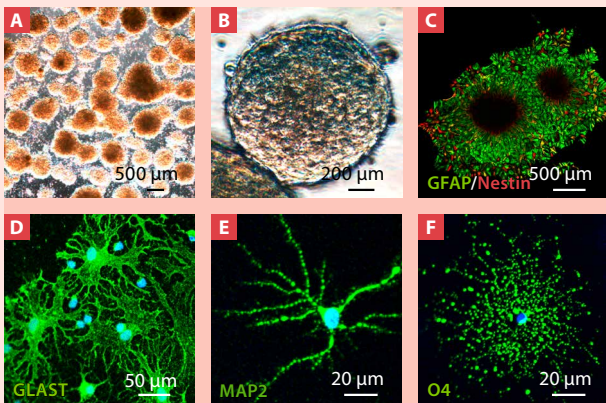


Figure 2: Isolated mouse neural stem cells cultivated in MACS Neuro Medium and MACS NeuroBrew-21 maintain neural stem cell potential and are able to differentiate into glial cells and neurons. Neural stem cells from the subventricular zone of mice formed neurospheres, which gave rise to secondary neurospheres (A, B). Neurospheres differentiated into glial cells as well as neurons as shown by expression of GFAP, nestin, GLAST, MAP2, and O4 (C–F).

Culture iPSC-derived neural cells

Differentiate iPSCs into neural progenitors and neural cells and get pure and functional neural cell cultures.

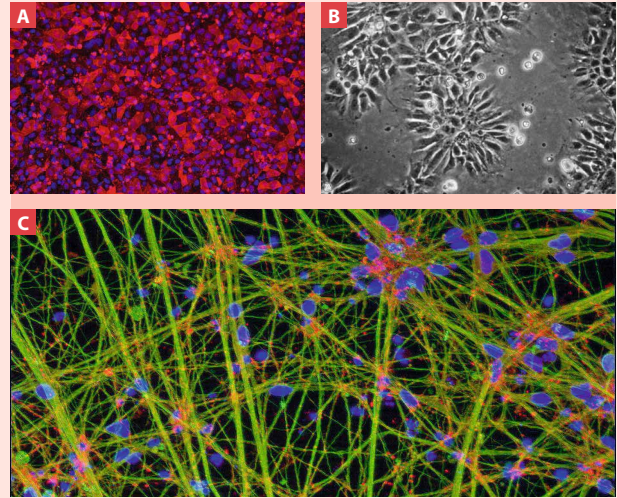


Figure 3: Human iPSC differentiation into neurons. iPSC monolayer in StemMACS™ iPS-Brew XF, human positive for TRA-1-60 (A). A homogeneous neuroepithelial layer was formed after neural induction with MACS Neuro Medium, MACS NeuroBrew-21, StemMACS A83-01, StemMACS LDN-193189, N2-Supplement, and DMEM-F12 (B). Immunofluorescence staining of iPSC-derived neurons differentiated for 8 weeks in MACS Neuro Medium, MACS NeuroBrew-21, N2-Supplement, and DMEM-F12 (synaptophysin, red; β III tubulin, green) (C).

Data courtesy of Dr. Julia Ladewig, Neural Development Group, Institute of Reconstructive Neurobiology, University of Bonn, Germany.

Overview of neural cell culture applications and supplements

Supplements	Cell types	
	Human PSCs and PSC-derived cells	Primary neural cells
MACS NeuroBrew-21 w/o Vitamin A (#130-097-263)	<ul style="list-style-type: none"> Differentiation of ES/iPSCs to neural progenitors Cultivation of ES/iPSC-derived neural progenitors 	<ul style="list-style-type: none"> Cultivation of neural stem or progenitor cells and neurospheres
MACS NeuroBrew-21 (#130-093-566)	<ul style="list-style-type: none"> Differentiation of neural progenitors to mature neural cells 	<ul style="list-style-type: none"> Cultivation of neurons, astrocytes*, oligodendrocyte precursor cells (OPCs), and oligodendrocytes

* For optimized culture results, AstroMACS Medium is recommended.

Miltenyi Biotec B.V. & Co. KG | Friedrich-Ebert-Straße 68 | 51429 Bergisch Gladbach | Germany | Phone +49 2204 8306-0 | Fax +49 2204 85197
macs@miltenyibiotec.de | www.miltenyibiotec.com

Miltenyi Biotec provides products and services worldwide. Visit www.miltenyibiotec.com/local to find your nearest Miltenyi Biotec contact.

Unless otherwise specifically indicated, Miltenyi Biotec products and services are for research use only and not for therapeutic or diagnostic use. MACS, NeuroBrew, StemMACS, and the MACS logo are registered trademarks or trademarks of Miltenyi Biotec B.V. & Co. KG and/or its affiliates in various countries worldwide. Copyright © 2019 Miltenyi Biotec B.V. & Co. KG and/or its affiliates. All rights reserved.