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.

Culture iPSC-derived neural cells

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

Maintain pluripotency 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.

Overview of neural cell culture applications and supplements

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<th>Supplements</th>
<th>Human PSCs and PSC-derived cells</th>
<th>Primary neural cells</th>
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| MACS NeuroBrew-21 w/o Vitamin A (#130-097-263) | • Differentiation of ES/iPSCs to neural stem cells  
• Maintenance of ES/iPSC-derived neural stem cells | • Cultivation of neural stem or progenitor cells and neurospheres                      |
| MACS NeuroBrew-21 (#130-093-566)   | • Differentiation of neural stem or progenitor cells to mature neural cells                     | • Cultivation of neurons, astrocytes*, oligodendrocyte precursor cells (OPCs), and oligodendrocytes |

* For optimized culture results, AstroMACS Medium is recommended.

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.

Figure 2: Isolated mouse neural stem cells cultivated in MACS Neuro Medium and MACS NeuroBrew-21 maintain pluripotency 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).

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; βIII tubulin, green) (C).

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