

NDiff® N27 & NDiff® N27-AF

Catalogue Numbers SF-NS-02-010, SF-NS-02-010-AF

Size NDiff N27 and NDiff N27-AF each consist of an ampoule containing 10mL of 100x concentrated liquid supplement.

NDiff N27-AF is the animal component-free equivalent of the NDiff N27 formulation. NDiff N27-AF contains components of yeast recombinant, synthetic and human origin, and no components of animal origin.

Larger volumes, variants with either HOLO- or APO-transferrin, and without retinoic acid are available upon request.

Applications

Demonstrated applications* include:

- Mouse neural stem (NS) cell derivation from embryonic stem (ES) cells and sourced central nervous system (CNS) tissue
- Neural differentiation of mouse and human ES cells in monolayer culture
- Mouse ES cell culture

Extended applications* include:

- Maintenance and expansion of mouse and human NS cells from sourced CNS tissues and from ES cell lines
- Differentiation of mouse and human NS cells into functional neurons
- Derivation, maintenance and expansion of adherent mouse and human ES cells and induced Pluripotent Stem (iPS) cells

*With addition of further supplements

Description

NDiff N27 is a concentrated, defined, serum-free cell culture supplement. Based on the B18/B27 formulations¹, NDiff N27 was originally developed and optimised for the *in vitro* long term expansion of rat and mouse *ex vivo* neural progenitors¹, and for mouse ES cell maintenance² and adherent monolayer neural differentiation³⁻⁷. More recently, B27-like supplement formulations such as NDiff N27 have been adopted for the maintenance of pluripotency of human ES and iPS cells and for the expansion of pluripotent stem cells when further supplemented with N2 (such as NDiff N2 or NDiff N2-AF, SC Proven Cat. Nos. SF-NS-01-005, SF-NS-01-005-AF), cytokines (Leukemic Inhibitory Factor, LIF), growth factors (Fibroblast Growth Factor-2, FGF-2; Epidermal Growth Factor, EGF; Activin) and small molecule kinase inhibitors⁸⁻¹². NDiff N27-AF is suitable for the same applications.

NDiff N27 and NDiff N27-AF contain vitamins, hormones, transferrin, antioxidants, fatty acids and fatty acid precursors.

Storage

Upon receipt, store at -20°C in the dark until ready to use. **This product is light sensitive.** When stored under these conditions, the product is stable for 6 months from the date of manufacture (see label). Once combined with media, store at 2 to 8°C in the dark and use within 4 weeks.

The contents are sterile if the seal has not been tampered with or broken.

Preparation Thaw the frozen 10mL NDiff N27/-AF supplement at room temperature; once thawed, the supplement can be aliquoted into smaller volumes and stored at -20°C **in the dark** until further use within the expiry date. Additional freeze-thaw cycles are not recommended.

Add aseptically to warmed base medium and mix thoroughly to ensure the supplement is thoroughly distributed. This supplement is supplied as a 100X concentrate and should be added at 10mL/L of medium (i.e. 1X final working concentration). **However, it is highly recommended that for any specified application and cell type that a range of NDiff N27 and NDiff N27-AF dilutions between 1:400 and 1:40 (i.e. 0.5X – 5X) be evaluated to achieve optimal results.**

Additional reagents required NDiff N27 and NDiff N27-AF have been pre-screened for use with the SC Proven® media product RHB-Basal (Cat. No. SCS-SF-NB-00) for optimal performance.

Quality control SC Proven® media products undergo rigorous quality control procedures before release.

- References**
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 2. Nichols J, Ying QL, Derivation and propagation of embryonic stem cells in serum- and feeder-free culture. *Methods Mol Biol* (2006) 329:91-98.
 3. Ying Q-L, Smith AG, Defined conditions for neural commitment and differentiation. *Methods Enzymol* (2003) 365:327-341.
 4. Ying QL, *et al.*, Conversion of embryonic stem cells into neuroectodermal precursors in adherent monoculture. *Nat Biotechnol.* (2003) 21(2):183-186.
 5. Conti L, *et al.*, Niche-independent symmetrical self-renewal of a mammalian tissue stem cell. *PLoS Biol* (2005) 3(9):e283.
 6. Pollard SM, *et al.*, Adherent neural stem (NS) cells from fetal and adult forebrain. *Cereb Cortex* (2006) 16 Suppl 1:112-20.
 7. Conti L, *et al.*, Neural stem cell systems: diversities and properties after transplantation in animal models of diseases. *Brain Pathol.* (2006) 16(2):143-154.
 8. Liu Y, *et al.*, A novel chemical-defined medium with bFGF and N2B27 supplements supports undifferentiated growth in human embryonic stem cells. *BBRC* (2006) 346:131-139
 9. Yao S, *et al.*, Long-term self-renewal and directed differentiation of human embryonic stem cells in chemically defined conditions. *PNAS* (2006) 103(18):6907–6912.
 10. Hanna J, *et al.*, Human embryonic stem cells with biological and epigenetic characteristics similar to those of mouse ES cells. *PNAS* (2010) 107(20):9222-7.
 11. Yu J, *et al.*, Efficient Feeder-Free Episomal Reprogramming with Small Molecules. *PLoS ONE* (2010) 6(3):e17557.
 12. Tsutsui H, *et al.*, An optimized small molecule inhibitor cocktail supports long-term maintenance of human embryonic stem cells. *Nat Commun* (2011) 2:167.