

# NeuroCult™-XF

## Xeno-Free Proliferation Medium

## Defined, Xeno-Free (XF) Medium

For the Proliferation of Human Neural Stem and Progenitor Cells

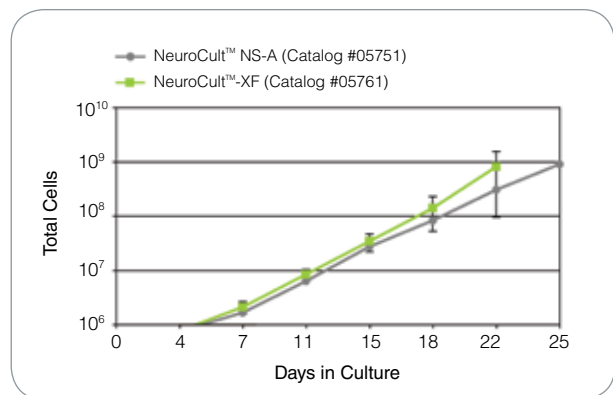
### Introduction

Neural stem cells (NSCs) isolated from human central nervous system tissue can be maintained in suspension culture, as cellular aggregates called neurospheres, or as an adherent cell monolayer. Basic techniques for culturing NSCs have been established; however, the culture medium typically contains serum or animal-derived components. Given the interest in using NSCs for regenerative medicine, there is a need for xeno-free culture systems to support research prior to the development of cell-based therapies. STEMCELL Technologies has developed NeuroCult™-XF Proliferation Medium, a xeno- and serum-free culture medium designed to support long-term culture and reproducible expansion of human NSCs in culture. This standardized, xeno-free formulation will facilitate research to assess the therapeutic relevance of neural stem cells.

### Advantages of NeuroCult™-XF Proliferation Medium

- Defined, xeno-free formulation
- Efficient expansion of NSCs as neurospheres or an adherent cell monolayer
- Maintains neural stem cell multi-lineage potential in long-term culture

### Neural Stem Cell Expansion



**Figure 1. Efficient Generation and Expansion of Neurospheres Using NeuroCult™-XF**

Neurospheres derived from human fetal central nervous system (CNS) tissue can be efficiently generated and maintained for multiple passages in NeuroCult™-XF Proliferation Medium. Total cell expansion obtained with NeuroCult™-XF Proliferation Medium is comparable to that obtained with NeuroCult™ NS-A Proliferation Medium (Human).

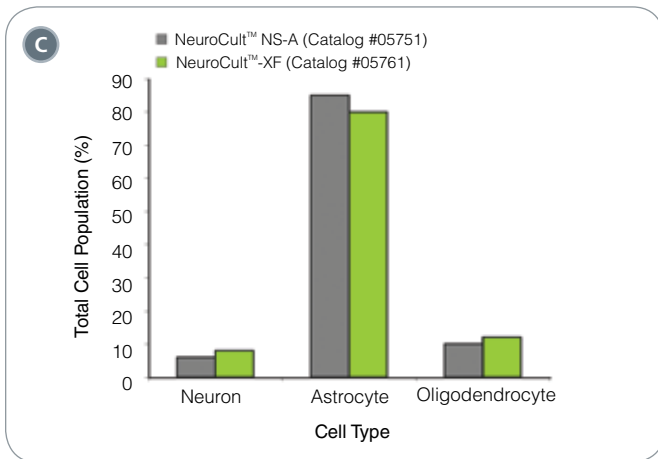
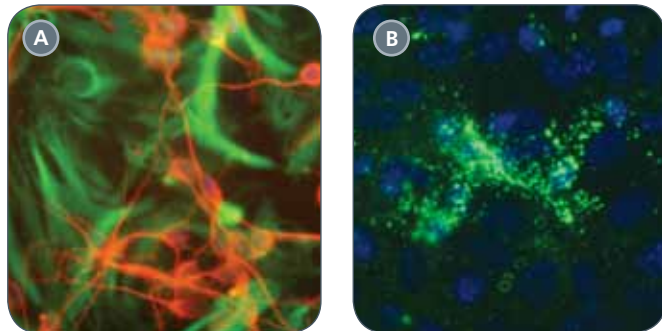


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## Maintainance of Neural Stem Cell Multi-Lineage Potential



**Figure 2.** NSCs Cultured in NeuroCult™-XF Proliferation Medium Retain Multi-Lineage Potential in Long-Term Cultures

Cells obtained from passage 10 neurospheres cultured in NeuroCult™-XF Proliferation Medium were differentiated under xeno-free differentiation conditions. Immunofluorescent staining was performed to identify the differentiated cell types. (A) Neurons (red) were detected with a mouse monoclonal  $\beta$ -tubulin III antibody and astrocytes (green) were detected with a rabbit polyclonal GFAP antibody. (B) Oligodendrocytes (green) were detected with a mouse monoclonal Oligodendrocyte Marker O4 antibody and cell nuclei (blue) were counterstained with DAPI. (C) Percentage of neurons, astrocytes and oligodendrocytes generated following differentiation of NSCs previously cultured in NeuroCult™-XF or NeuroCult™ NS-A Proliferation Medium (Human).

## Order Information

PRODUCT	QUANTITY	CATALOG #
NeuroCult-XF Proliferation Medium*	500 mL	05761
Carrier-Free rh EGF	200 $\mu$ g	02653
Carrier-Free rh bFGF	25 $\mu$ g	02654
Heparin (0.2% Heparin Sodium Salt in PBS)	2 mL	07980

\*Requires supplementation with rh EGF and rh bFGF. To provide a complete xeno-free culture system, carrier-free cytokines should be used. Carrier-free cytokines are supplied without carrier proteins, such as bovine serum albumin (BSA). Human serum albumin (HSA) can be added during preparation of the cytokine, to increase stability. Note: the bFGF cofactor, heparin, can be added to NeuroCult™-XF, however, the heparin solution contains non-human animal-derived components and can be omitted if a complete xeno-free system is desired.

For customized medium formulation and manufacturing requirement requests, contact us at [info@stemcell.com](mailto:info@stemcell.com).

## Abbreviations

CNS: central nervous system

DAPI: 4'-6-diamidino-2-phenylindole

GFAP: glial fibrillary acidic protein

NSC: neural stem cell

rh EGF: Recombinant Human Epidermal Growth Factor

rh bFGF: Recombinant Human Basic Fibroblast Growth Factor

STEMCELL Technologies has optimized xeno-free culture conditions for human neural stem cells. Protocols for neural stem cell expansion, and for differentiation into neurons, astrocytes and oligodendrocytes are available. Contact us at [info@stemcell.com](mailto:info@stemcell.com) for more information.