INNOVATE & DISCOVER

StemCultures

CONTROLLED-RELEASE BDNF & GDNF ENHANCES NEURONAL CULTURES

Why Use Controlled-Release Technology?

Do you know how the components of your media change over time? Most growth factors have a short half-life in culture medium. BDNF has a half-life of 2 hours (**Figure 1A**) and GDNF has a half-life of only 45 minutes in culture medium (**Figure 2A**)! StemCultures introduces controlled-release growth factor media additives, delivering stable, defined levels for superior neuronal cultures. Experience enhanced cell cultures as we address the challenge of fluctuating growth factor levels, extending the lifespan of critical factors like BDNF and GDNF.

BENEFITS

- Stable growth factor levels (**Figure 1B, 1C, 2B, 2C**).
- Known growth factor levels (**Figure 1B, 1C, 2B, 2C**).
- Less media and labor cost (**Figure 3**).
- Increases MAP2A-positive axonal projections (**Figure 4**).
- Increases number of processes per neuron (**Figure 5**).
- Increases Synapsin1 co-localization with MAP2A positive cortical neurons (**Figure 4**).

FIGURE 1

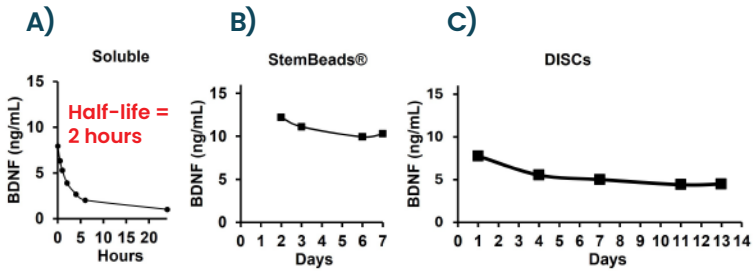
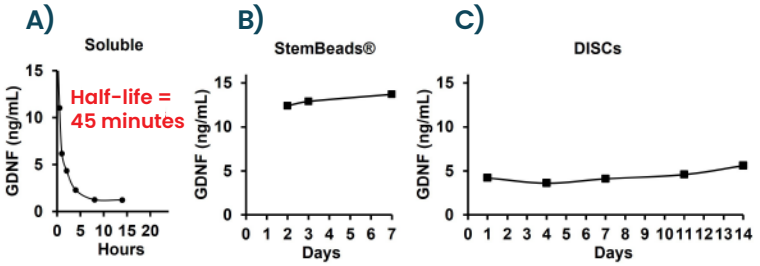
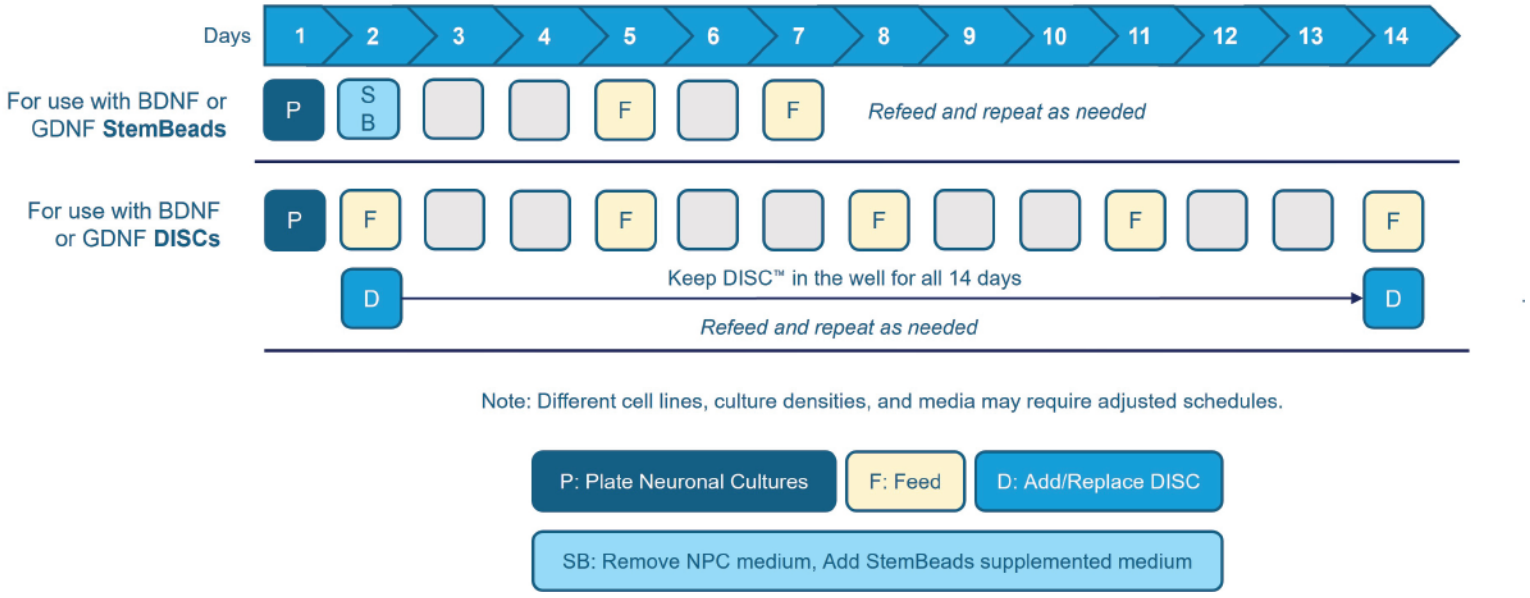


FIGURE 2



Recommended Feeding Schedule

FIGURE 3



Note: Different cell lines, culture densities, and media may require adjusted schedules.

P: Plate Neuronal Cultures | F: Feed | D: Add/Replace DISC

SB: Remove NPC medium, Add StemBeads supplemented medium

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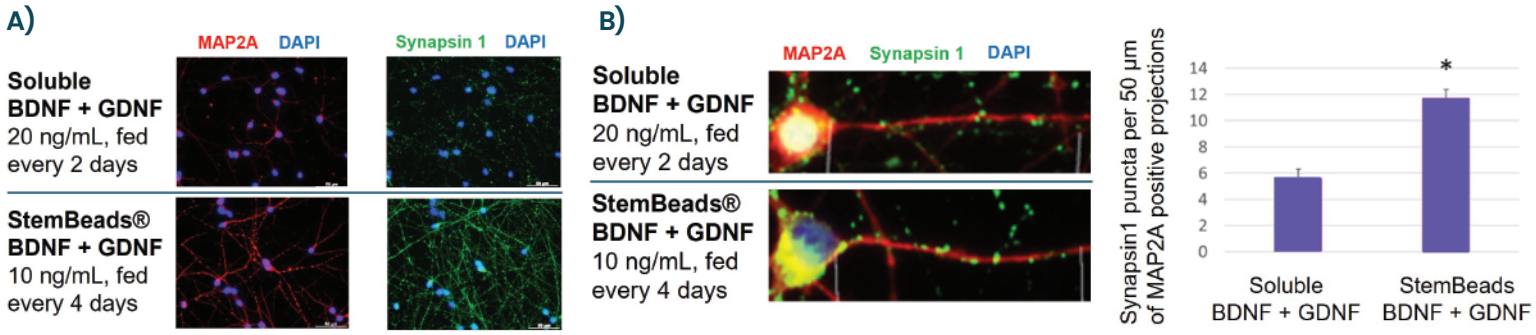
Improvements to Cell Quality

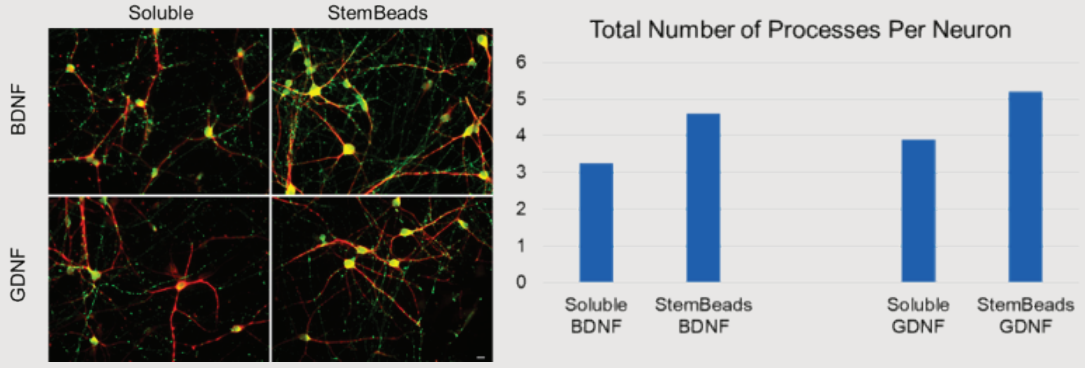
FIGURE 4



Immunofluorescent images of human iPSC derived forebrain neurons stained with mature neuron marker MAP2A (red), pre-synaptic marker synapsin1 (green) and nuclear dye DAPI (blue). Neurons were differentiated with 20 ng/mL soluble growth factors fed every other day (top row) compared to 10 ng/mL of controlled-release StemBeads® fed every 4 days (bottom row). A) Neurons generated with StemBeads® had increased MAP2A mean fluorescent intensity. B) Neurons generated using StemBeads® and fed less often significantly ($P < 0.05$) increased the colocalization of pre-synaptic marker synapsin1 with MAP2A.

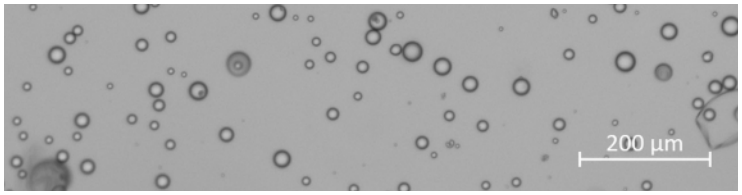
FIGURE 5

Neurons grown with StemBeads BDNF or GDNF showed a higher number of processes per neuron compared to neurons grown with soluble BDNF or GDNF.



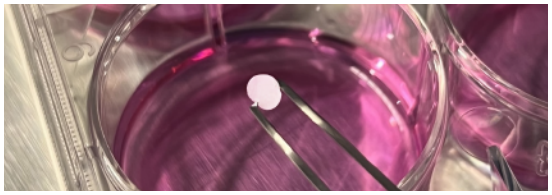
Product Selection Guide

Two Controlled-Release BDNF and GDNF Products



StemBeads®

StemBeads® 15 µm biodegradable PLGA microbeads.



Scan To Order

DISC™ Devices

Biocompatible DISC™ hydrogel carrier loaded with StemBeads®.

For ordering and technical support, please contact support@stemcultures.com

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All data and images were collected in collaboration with the Neural Stem Cell Institute: www.neuralsci.org