

# Ready-to-use rat glial precursor cells with superior purity

## GIBCO® Rat Glial Precursor Cells

- Upon proliferation, more than 80% of stem cells retain undifferentiated phenotype
- Support differentiation to oligodendrocytes and astrocytes
- More than 2-fold increase in cells upon recovery

Glial precursor cells are restricted progenitors; the majority of their downstream progeny are oligodendrocytes and astrocytes [1,2]. Oligodendrocytes produce myelin to protect neurons and secure proper signal transduction [3]. Demyelination is involved with multiple sclerosis, Addison-Schilder disease (ALD), and other disorders. Because of their capacity to generate oligodendrocytes and astrocytes, rat glial precursor cells (rGPCs) can be used for neuroscience studies as well as stem cell differentiation, tissue engineering, cell and genetic therapy, and transplantation experiments [4].

## GIBCO® Rat Glial Precursor Cells

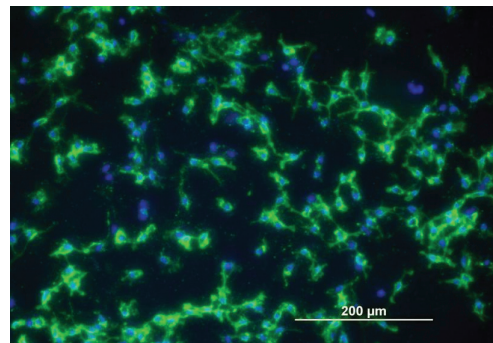
Each vial contains  $1 \times 10^6$  rGPCs isolated from newborn Sprague-Dawley rat cortices. The cells are expanded and cryopreserved at the end of passage 2 (P2). To ensure lot-to-lot consistency, each lot is prepared by sorting cells based on A2B5 expression. Each lot is quality-controlled for purity and differentiation potential into glial cells.

## More than 80% of rGPCs retain their undifferentiated phenotype

In order to yield relevant and easy-to-interpret scientific data, it is important that high-purity cells are used. To meet this requirement, each lot of GIBCO® rGPCs is prepared by sorting cells based on A2B5 expression, so only desired cell populations are harvested. Equally important, more than 80% of the GIBCO® rGPC population retains the undifferentiated phenotype marker A2B5 (Figure 1) upon proliferation.

## Differentiation of GIBCO® Rat GPCs

An important quality feature of progenitor cells is their *in vivo* and *in vitro* ability to differentiate into downstream progenies such as oligodendrocytes and astrocytes for glial progenitors. GIBCO® rGPCs not only meet that requirement after isolation, but also retain their differentiation potential after expansion. Figure 2 shows that about 30–50% of rGPCs differentiated into oligodendrocytes, as measured by the positive stain of the oligodendrocyte-specific marker GalC.



**Figure 1. Rat GPCs stained by indirect immunofluorescence for the cell-surface marker A2B5 (green). Nuclei were stained with DAPI (blue). The cells were maintained in the undifferentiated state in GPC recovery medium for three days before 4% paraformaldehyde fixation and staining.**

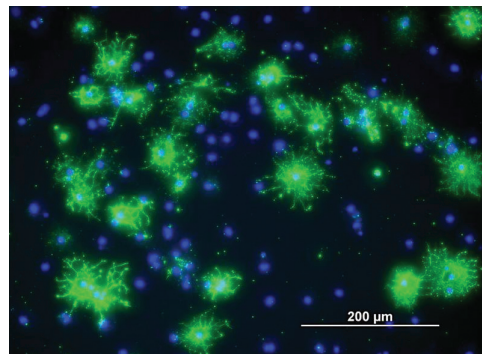
## Proliferation of GPCs upon recovery

GIBCO® rGPCs can be further expanded for at least one passage upon thawing in GPC recovery media. The proliferation abilities afford researchers a more than 2-fold increase in cell numbers, while the cells retain their typical morphology (Figure 3).

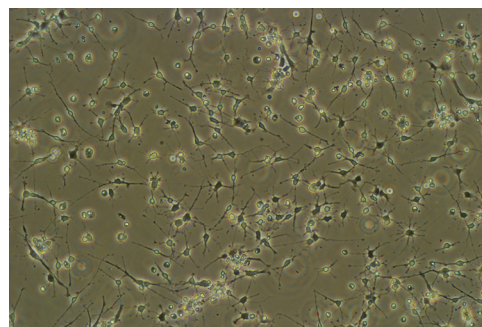
### Components of GPC recovery medium

Product Name	Size	Cat. No.
StemPro NSC SFM	500 mL	A1050801
GlutaMax-1 Supplement	100 mL	35050061
PDGF-AA, Recombinant Human	10 µg	PHG0035

For more information, visit [www.invitrogen.com/ratgpc](http://www.invitrogen.com/ratgpc).



**Figure 2. Rat GPCs differentiating to oligodendrocytes.** The cells were differentiated in DMEM/F-12, N2, and 2% fetal bovine serum for 3 days before 4% paraformaldehyde fixation and staining. The cell-surface marker GalC was detected by indirect immunofluorescence (green). Nuclei were stained with DAPI (blue).



**Figure 3. Rat GPCs expanded 2-fold upon recovery.** Bright-field image of rGPC at passage 3 (P3) cultured in complete StemPro® NSC SFM supplemented with 2 mM GlutaMAX™-1 and 10 ng/mL PDGF-AA (complete GPC growth medium) for three days. The image was captured using a 10x objective lens.

## Ordering information

Product	Quantity	Cat. No.
GIBCO® Rat Glial Precursor Cells	1 vial (1 x 10 <sup>6</sup> viable cells/mL)	N7746-100

### References

1. Kalyani, A.J. and Rao, M.S. (1998) Cell lineage in the developing neural tube. *Biochem Cell Biol* 76:1051–1068.
2. Rao, M.S. (1999) Multipotent and restricted precursors in the central nervous system. *Anat Rec* 257:137-148.
3. Gage, F.H. (2000) Mammalian neural stem cells. *Science* 287:1433–1438.
4. Temple, S. (2001) The development of neural stem cells. *Nature* 414:112.

GIBCO® supplies media, sera, and reagent technology that set the standard for reliability and productivity in cell culture systems.



[www.invitrogen.com](http://www.invitrogen.com)

For research use only. Not intended for any animal or human therapeutic or diagnostic use, unless otherwise stated.

© 2009 Life Technologies Corporation. All rights reserved. The trademarks mentioned herein are the property of Life Technologies Corporation or their respective owners. These products may be covered by one or more Limited Use Label Licenses (see Invitrogen catalog or [www.invitrogen.com](http://www.invitrogen.com)). By use of these products you accept the terms and conditions of all applicable Limited Use Label Licenses. **F-085376 0709**