

## Match Overview

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**Name of Journal:** *World Journal of Stem Cells*

**Manuscript NO:** 57971

**Manuscript Type:** ORIGINAL ARTICLE

*Basic Study*

**Stem cell transplantation and/or adenoviral GDNF promoted functional recovery in hemiparkinsonian rats**

MSC and GDNF in PD therapy

## Abstract

### BACKGROUND

Parkinson's disease (PD) is a neurological disorder characterized by the progressive loss of midbrain dopamine (DA) neurons. Bone marrow mesenchymal stem cells (BMSCs) can be differentiated into multiple cell types including neurons and glia. Transplantation of BMSC is regarded as a potential approach for promoting neural regeneration.



Stem cell transplantation and/or adenoviral GDNF promoted function



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## GDNF Enhances Therapeutic Efficiency of Neural Stem Cells ...

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4861802>

Multiple sclerosis (MS) is an autoimmune disease in the CNS. The current immunomodulating drugs for MS do not effectively prevent the progressive neurological decline. **Neural stem cells** (NSCs) **transplantation** has been proven to **promote repair** and **functional recovery** of experimental allergic encephalomyelitis (EAE) animal model for MS, and **glial cell line-derived** neurotrophic factor (**GDNF**) has also been found to have capability of **promoting axonal regeneration** ...

**Cited by:** 6**Author:** Xiaoqing Gao, Li Deng, Yun Wang, Ling Yin, ...**Publish Year:** 2016

## Regeneration after stroke: Stem cell transplantation and ...

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6126254>

**Transplantation** of the Bcl-2-upregulated **cells** improved **functional recovery** in animals with transient cerebral ischemia. Promoting **cell transplant** survival through the upregulation of survival factors has become increasingly used method in the field of **stem cell transplantation** for stroke therapy.

**Cited by:** 7**Author:** Monica Chau, James Zhang, Ling Wei, Sha...**Publish Year:** 2016

## GDNF gene-engineered adipose-derived stem cells seeded Emu ...

<https://www.sciencedirect.com/science/article/pii/S1773224720313848>

A meta-analysis of 1568 rats with traumatic SCI showed that MSC **therapy** provided a substantial beneficial effect on **locomotor recovery**. Although **stem cells** possess a central role in SCI regeneration, the regenerative properties of these **cells** are limited because of their lower survival rate and low levels of differentiation after **transplantation**. Over-expression of **glial cell-derived** neurotrophic factor (**GDNF**) ...

**Author:** Kazem Nejati, Kazem Nejati, Dadashpo...**Publish Year:** 2020



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### Glial Cell Line-derived Neurotrophic Factor-overexpressing ...

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6946112>

Tai MH, Cheng H, Wu JP, Liu YL, Lin PR, Kuo JS, Tseng CJ, Tzeng SF. Gene transfer of **glial cell line-derived neurotrophic factor** promotes **functional recovery** following spinal cord contusion. Exp Neurol. 2003; 183:508–515. doi: 10.1016/S0014-4886(03)00130-4. [Google Scholar]

**Author:** Kyujin Hwang, Kwangsoo Jung, Il-Sun K... **Publish Year:** 2019

### History of Glial Cell Line-Derived Neurotrophic Factor ...

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6025482>

GDNF was first identified as a **neurotrophic factor** released from **glial cells** by Engele et al. [1] and Lin et al. [2], in its promotion of the survival of dopaminergic neurons. The GFR $\alpha$ -1 receptor was first reported in **Cell** in 1996 [3], following its isolation, cloning, and characterization from rat retinal **cells**; a study which also detailed the interaction between GDNF, GFR $\alpha$ -1, and the cRET ...

**Cited by:** 8 **Author:** Melissa J. Walker, Xiao-Ming Xu

**Publish Year:** 2018

### Human neural stem cells overexpressing glial cell line ...

<https://www.nature.com/articles/gt200951>

Jun 25, 2009 · Recent studies have reported that **glial cell line-derived growth factor** (GDNF) has **neurotrophic** effects on the central nervous system, and the neural **stem cells** ...

**Cited by:** 67 **Author:** H J Lee, I H Park, H J Kim, H J Kim, S U Kim

**Publish Year:** 2009

### Intravenous administration of glial cell line-derived ...

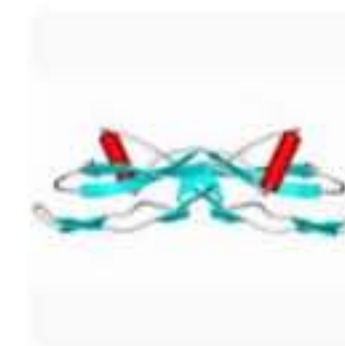
<https://onlinelibrary.wiley.com/doi/abs/10.1002/jnr.21056>

Sep 22, 2006 · Aleksandra Glavaski-Joksimovic, Tamas Virag, Thomas A. Mangatu, Michael McGrogan, Xue Song Wang, Martha C. Bohn, **Glial cell line-derived neurotrophic factor**—secreting genetically modified human bone marrow-derived mesenchymal **stem cells** promote **recovery** in a rat model of Parkinson's disease, Journal of Neuroscience Research, 10.1002/jnr ...

**Cited by:** 262 **Author:** Yoshifumi Horita, Osamu Honmou, Osamu ...

**Publish Year:** 2006

## Glial Cell Line-derived Neurotrophic Factor



Glial cell-derived neurotrophic factor (GDNF) is a protein that, in humans, is encoded by the GDNF gene. GDNF is a small protein that potently promotes the survival of many types of neurons. It signals through GFR $\alpha$  receptors, particularly GFR $\alpha$ 1. It is also responsible for the determination of spermatogonia

into primary spermatocytes i.e. It is received by RET and by forming gradient with SCF it divides the spermatogonia into two cells. As the result there is retention of spermatogonia and formation of spermatocyte. [Scott F. Gilbert]

Wikipedia

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