

**Technology**

Novel cell line for treatment of chronic pain and/or spasticity in patients with spinal cord injury

**Inventor**

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**Key Features**

- Phenotypically and morphologically homogeneous cell lines
- Human origin and pluripotent cells
- Readily available and easily grown cells
- Shown to integrate into nervous tissue after implantation

**Stage of Development**

Reduced to practice with successful demonstration in both in vitro and animal models

**Keywords**

Therapeutic  
- CNS  
- Spinal cord injury  
- Chronic pain  
- Spasticity  
- Human NT2 cells  
- Neurodegenerative disease

**Patent Status**

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## Clonal Human hNT2 Neuronal Cell Lines as 'Cellular Minipumps' to Treat Neurodegenerative Disorders and the Consequences of Brain and Spinal Cord Injuries

(VA Reference No. 02-106)

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*Method of creating novel cell lines from a human NT2 parent line for treatment of chronic pain in patients with spinal cord injury*

**Technology**

The Department of Veterans Affairs has developed a method of creating novel cell lines from a human NT2 parent line that provides replacement or palliative therapy to victims of spinal cord injury (SCI) suffering chronic pain and/or spasticity.

**Description**

The technology developed by the VA provides replacement or palliative therapy to victims of SCI suffering chronic pain and/or spasticity. The technology includes the use of clonal human hNT2 neuronal cell lines which act as 'cellular minipumps' and involve phenotypically pure subclones of hNT2 cells. These cells act as pumps to deliver neurotransmitters such as GABA, serotonin, or glycine when implanted near the central nervous system of persons suffering from neurodegenerative diseases or SCI.

Subcloning was used to develop these novel human neural cell lines. The cells are processed and can differentiate into human neurons. Such cells can be safely transplanted into the patient, with no danger of tumor formation, since they are irreversibly disimmortalized and no longer capable of division. In addition, they have characteristic features including the ability to make and secrete useful agents, such as the neurotransmitters serotonin, gamma aminobutyric acid and glycine.

**Competitive Advantage**

Current pain treatment options, such as pharmacological agents and implantable mechanical pumps, have been associated with many unacceptable problems and side effects.

This invention:

- Produces novel cell lines that are more phenotypically and morphologically homogeneous than currently available cell lines.
- Results in cells that are easily grown and differentiated.
- Results in cells that are capable of long term survival following implantation.

**Status**

The Department of Veterans Affairs is looking for a partner for further development and commercialization of this technology through a license, and the VA inventors are available to collaborate with interested companies through a Cooperative Research and Development Agreement (CRADA).

