Method for Treating Spinal Cord Injury and Paralysis

Tech ID: 22677 / UC Case 2011-227-0

BACKGROUND

Unlike most other tissues in the human body, which have the ability to heal themselves after injury, damaged axons in the spinal cord cannot heal and recover their function by regenerating or synapsing with other neurons. Despite recent successes in models of partial spinal cord injury (SCI), there is great unmet need in solutions that lead to axonal regeneration and functional recovery after complete spinal cord transection.

TECHNOLOGY DESCRIPTION

UCSD researchers have discovered that neural stem cells that were grafted into the site of spinal cord injury will differentiate into neurons with long-extending axons that can synapse with host cells, and result in functional recovery in an animal model.

In addition, UCSD investigators have found that adding a novel mixture of polymerizing compounds and growth factors with stem cell grafts dramatically improves neuron survival and functional recovery. This allows early stage neurons to repair lesions in the adult central nervous system (CNS) by surviving, extending their axons and integrating with adult neurons through synapse formation.

ADVANTAGES

Despite the inability of adult CNS to regenerate and the inhibitory environment in the CNS, this method enhances the survival of stem cells that have been grafted into the nervous system, improves functional recovery and alleviates neurological deficits.

STATE OF DEVELOPMENT

The neuronal regeneration and functional recovery by the injected neural stem cells have been demonstrated in animal models. In addition, *in vivo* animal models of SCI show that in rat embryonic neural grafts, the novel mixture dramatically improves graft survival, enhances anatomical repair of the nervous system and improves functional outcomes.

INTELLECTUAL PROPERTY INFO

Patent rights are available for licensing.

RELATED MATERIALS

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PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,649,358	05/16/2017	2011-227

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OTHER INFORMATION

KEYWORDS
Spinal cord injury, cAMP, BDNF, brain-derived neurotrophic factor, stem cells

CATEGORIZED AS
- **Medical**
  - Disease: Central Nervous System

RELATED CASES
2011-227-0

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