

# STEM CELL NERVE REGENERATION

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**Abstract-***This paper will discuss the ways stem cells can be transplanted into patients with severe nerve damage in order to hopefully restore nerve function.*

## **I. Introduction**

Every year over 300,000 Americans suffer from nerve damage. Among these, 11,000 people annually have damage to nerves in their central nervous system. Those cells that are damaged in the CNS will not automatically regenerate often leaving patients with paralysis and loss of motor skills. In many cases surgery and others means of medical intervention can be taken to prevent further damage however there are few ways to regenerate these nerves. The use of stem cells is one of these few ways they can be.

## **II. Methods**

For centuries it was believed that if nerves in the CNS were damaged they could never be repaired. Recent tests with stem cells and nerve regeneration have proven otherwise. Even with today's technology however there have been very few surgery's done using stem cells to repair nerves. Currently scientists are cultivating embryotic stem cells and injecting them into patients with nerve damage in their CNS, specifically in the spinal cord. If done properly the stem cells will infiltrate the damaged site and release chemicals that aid in the repair of spinal cord nerves. The surgery should bring back lost motor skills to those patients suffering from damaged nerves. Many tests have been done on animals and have had positive results leading to a promising future with this type of surgery.

## **III. Limitations**

Embryotic stem cells have been deemed "inhumane" and raised many ethical concerns among society. Also, it is still not fully known whether or not stem cells will be able to regenerate nerves successfully without causing other serious health risks to the patients. Because of the complexity of the CNS and its need to maintain a rigid organized structure many believe this treatment will never be fully successful. This is because often times stem cells morphed into a specialty cell such as that of the spinal cord will be misshapen and vary in size. In order for the procedure to work patients must be injected within 2 weeks of the nerves taking damage as well leaving a small window of time for proper diagnosis. Finally, many public figures have spoken out openly against the use of stem cells.

## **IV. Discussion**

Although currently nerve regeneration is a very costly and controversial topic, scientists have high hopes that one day it will be the primary treatment for damaged nerves. There is currently research being done on "adult stem cells" which are cells in the human body specially designated for replenishing tissue. Scientists believe these cells can be manipulated so that they may be used in nerve regeneration. Scientists hope to find alternative ways to derive stem cells other than embryos as well. The University of Notre Dame has begun holding annual conferences to try and find these alternatives.

## **Citations:**

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