

Stem Cells

by Sophia



WHAT'S COVERED

In this lesson, you will be learning about the function of stem cells in treating nervous system disorders. Specifically, this lesson will cover:

1. Stem Cells

Many nervous system disorders involve the cells of the nervous system either dying or becoming damaged. Unfortunately, adult neurons very rarely divide, so if a critical neuron is damaged or destroyed, the body can't replace it.

Stem cell research offers hope for treating neurological disorders by taking cells that haven't specialized (they don't have a "job," such as "being a neuron") but are capable of dividing. Scientists then take these unspecialized cells (**stem cells**), put them in conditions that cause them to become neurons, then transplant them into patients to replace damaged neurons.



TERMS TO KNOW

Stem Cell Research

Research that is geared toward using stem cells to cure currently incurable diseases.

Stem Cells

A class of cells that are referred to as undifferentiated (unspecialized); these cells are found in embryos and adults and have the potential to form into specialized cells if they are exposed to the right environment.

2. Using Stem Cells to Treat Nervous System Disorders

New research has shown that neural stem cells in the brain can actually generate new neurons under certain circumstances. In the past, it was thought that stem cells could only be obtained from an embryo, which created an ethical debate because to obtain these stem cells from an embryo involved destroying the embryo.

Now, research is showing that these stem cells can actually be obtained throughout the brain or other body

tissues. We can use these undifferentiated cells, manipulate them, specialize them in a specific way, and then use them to repair damaged portions of the nervous system that are caused by diseases. This could be useful with disorders such as Alzheimer's, Parkinson's, and various other types of nervous system disorders.

Using stem cells is actually an extremely complex process. A simplified version of how this process can be used begins with a scientist starting with differentiated neural cells in a lab dish. The scientist would be able to manipulate them and grow them into the desired differentiated cell. Then that cell would be implanted into the patient to try to repair the damaged portion, or whatever portion of the cells need repairing, depending on the disorder that they have.

Another type of research is looking to find ways to help the body fire up their own stem cells to help repair for damage. If they can find a way to get the body to fire up those stem cells on their own, they wouldn't need to implant stem cells for this type of treatment. The body would just be able to do it on its own.



SUMMARY

This lesson has been an overview of **stem cells** and nervous system disorders. Specifically, you looked at an introduction to the issues, what a stem cell is, new stem cell research to **treat nervous system disorders**, and the stem cell implantation process.

Keep up the learning and have a great day!

Source: THIS WORK IS ADAPTED FROM SOPHIA AUTHOR AMANDA SODERLIND



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