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# PUSHIN' ON

## Headline News

**April 16, 2014** -- Neuralstem, Inc. announced that the Institutional Review Board of the University of California, San Diego, School of Medicine has approved the **Phase I** safety trial to treat chronic spinal cord injury (cSCI) with its NSI-566 stem cells. The NSI-566/cSCI Phase I trial will enroll patients with thoracic spinal cord injuries (T2-T12) who have an American Spinal Injury Association (AIS) A level of impairment, between one and two years after injury. AIS A impairment, which is complete paralysis, refers to a patient with no motor or sensory function in the relevant segments at and below the injury. The trial, which already has FDA approval, and has a one-year completion goal, will be under the direction of principal investigator (PI) Joseph Ciacci, MD, UC San Diego School of Medicine and neurosurgeon at UC San Diego Health System. Much of the pre-clinical work with the NSI-566 cells in spinal cord injury was conducted at UC San Diego School of Medicine by Martin Marsala, MD, professor in the Department of Anesthesiology, who will be another study investigator.

**SOURCE:** <http://www.prnewswire.com>

The Social Security Administration (SSA) has a

new Center for Section 504 Compliance (504 Center). Section 504 of the Rehabilitation Act of 1973 prohibits discrimination against individuals with disabilities, and requires the federal government to provide individuals with meaningful access to government facilities, programs, and services.

The Center for Section 504 Compliance has a Toll-Free Number (1-844-881-9061) for individuals to report issues and make suggestions regarding meaningful access. The business hours are Monday through Friday from 8:00 a.m. to 4:00 p.m. Eastern Standard Time (except Federal holidays).

**SOURCE:** <http://www.socialsecurity.gov>

May is National Physical Fitness and Sports Month: a great time to renew your commitment to a healthy, active lifestyle. According to the U.S. Department of Health & Human Services (HHS) Physical Activity Guidelines for Americans Midcourse Report: Strategies to Increase Physical Activities Among Youth, youth need 60 minutes or more of physical activity each day where they live, learn, and play. In addition to physical health benefits, regular activity provides cognitive health benefits as well. Research shows that when children are physically active, they achieve higher grades, record better attendance, and their behavior improves.

**SOURCE:** <http://fitness.gov>

## Participate in SCI Related Research

**The Effects of Virtual Walking on Pain in Spinal Cord Injury Patients** - The **UAB Spinal Cord Injury Model System (UAB-SCIMS)** seeks participants with spinal cord injury who live in Alabama, are over 18 years old, and have SCI related pain at or below the injury level. \$25 Visa gift cards for each of test days. For information, call 205-934-3345 or email [sciresearch@uab.edu](mailto:sciresearch@uab.edu).

**Exercise & Diet Research Study for Individuals with Spinal Cord Injury** - Participants are needed to test how well either an 8-week exercise or a nutritionally balanced and healthful diet program affect blood glucose and insulin levels, blood lipids, bone and muscle health in individuals with SCI. Participants must be adults ages 19-60, have a level of injury between C5 and T12, and able to attend 3 exercise sessions or 2 food pick-up sessions per week at UAB for 8 weeks. For information, call 205-500-8180 or email [sciresearch@uab.edu](mailto:sciresearch@uab.edu).

# HEALTHY LIVING



## Questions and Answers: Research for a Cure

As a person with spinal cord injury (SCI), you want to stay informed of progress in research for a cure. The problem is that it is hard to find reliable information.

People who follow the [University of Alabama at Birmingham Spinal Cord Injury Model System \(UAB-SCIMS\)](#) via [email](#), [facebook](#) and [twitter](#) were recently asked to submit their questions on the topic. Dr. Candace Floyd answered those questions. She is the director of research at the [UAB Department of Physical Medicine and Rehabilitation](#). Dr. Floyd is an expert in basic science research toward a cure for SCI.

### *How close is science to finding a cure?*

Everyone knows this is THE crucial question. Progress is being made, but we do not have enough knowledge to provide a time-line.

### *How close is science to finding a cure through stem cell research?*

Current advances in stem cell research and technology show that stem cells may have therapeutic potential, but, again, it is impossible to provide a timeline. Many questions still need to be answered. For example, “stem cell” is a broad term that includes many types of cells from many different tissue origins. It is not yet known which cell type is “best” for repairing a damaged spinal cord. If we find the best cell type that actually works, we will still need to find out how many cells (dose) and at what time after injury the use of cells will be safe and effective. Thus, more research is vital.

### *How promising are Schwann cells as a cure?*

To understand Schwann cells, you need to first understand their function within the peripheral nervous system (PNS). The PNS is that network of nerve strands that branch off from the left and right sides of the spinal cord. These nerve pairs spread throughout your body to deliver commands from your brain and spinal cord to and from parts of your body. Schwann cells stimulate regeneration and repair of damaged peripheral nerves. Specifically, Schwann

cells guide the regrowth and repair of nerve fibers (axons) that conduct the electrical impulses that are essential for nerves to function. Schwann cells also repair the layer of insulation (myelin) around the axons.

Spinal cord nerves are different from peripheral nerves. There are no cells that stimulate the repair of damage to spinal cord nerves. Clinical trials are now underway to test the safety of transplanting Schwann cells in the spinal cord. Thus, Schwann cells, like stem cells, seem to be a promising treatment, but many questions about the safety and effectiveness remain to be answered.

### *How would transplantation of cells into the spinal cord actually help?*

The main idea behind cell transplantation for SCI is that the cells are thought to promote regeneration and repair of damaged nerves by:

- secreting nerve growth-promoting molecules (neurotrophic factors);
- providing a scaffold for regenerating axons;
- repairing damaged myelin; or
- replacing damaged or lost cells.

### *When a cure is found for paralysis, won't it benefit people who are newly injured more so than people who are years post injury?*

There is a lot of ongoing research focused on the acute stage of injury. This is because the chronically injured spinal cord is more resistant to repair than the newly injured spinal cord. Thus, research in the acute stage offers a greater likelihood of success.

One major focus of newly injured research is aimed at developing a way to protect the spinal cord nerve cells from “secondary” injury (cellular protection). This is important because damage to the spinal cord does not stop with the initial injury. Swelling can continue to damage nerves for hours after the initial trauma of the injury. An effective treatment will minimize this secondary damage and reduce the extent of disability. So, yes, this type of treatment will first benefit people who are newly injured.

However, it is important to note that experiments that prove to be effective for acute injuries will probably next be tested for chronic injuries. Plus, there are other areas of research aimed at benefiting both new and chronic injuries. This includes research to regenerate and repair damaged spinal cord tissue and improve rehabilitation and recovery of function by increasing plasticity (connections).\*

***Is there a governing board that reviews all the work and research results to ensure rapid adoption of discoveries?***

This is an exciting time for research and discovery. [The National Center for Advancing Translational Sciences \(NCATS\)](#) is the newest of 27 Institutes and Centers at the National Institutes of Health. The purpose of the NCATS is to enable researchers at universities and in industry to work closely with government agencies to ensure new treatments and cures for disease can be delivered to patients faster. The chart (right) shows how Translational Science progresses from discovery to use.

***I read where people in other countries have cures, so why can't we do it?***

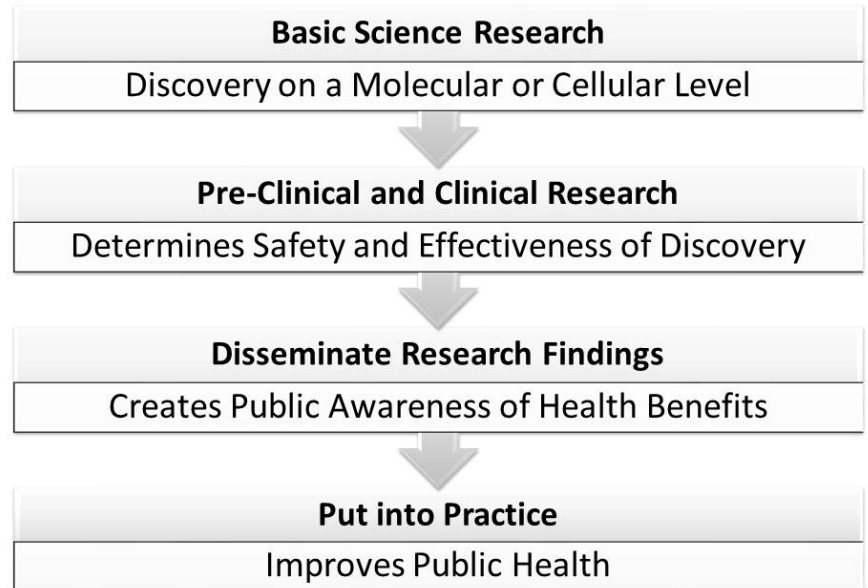
It is very important to consider that all information needs to be verified. As a scientist, I present and attend international conferences on SCI. I know that there are many statements made by foreign scientists and clinicians that cannot be verified using our accepted scientific methods. In the United States, we use well-accepted [scientific methods](#) that are open to evaluation, verification, and peer review. These are the measures of good science, evidence-based medicine and the foundation to the discovery of cures that truly work. Unfortunately, not all countries use these same measures, and individuals often make claims that do not stand up upon careful inspection.

*\* Editor's Note:*

A 2011 case study<sup>1</sup> reported that a person with SCI gained limited control of leg movement after 7 months of intense stand training using epidural stimulation. The person was over 2-years post-injury and had a motor complete, sensory incomplete injury (ASIA B). It was thought that the intense training and repetitive

movements may have stimulated neural plasticity, a rewiring of sensory nerves that resulted in voluntarily leg movement.

In 2014, a follow-up study<sup>2</sup> was recently published. Four people with SCI who were at least 2-years after injury received the same epidural stimulation implant



below their levels of injury. One of the 4 people, who was ASIA B, was able to perform voluntary movement after the 7 month training. However, a surprising result was that the other 3 people were able to intentionally move their legs on command, even before the 7 months of intense training. And the groundbreaking result was that 2 of those 3 had motor and sensory complete injury (ASIA A).

Findings from the 2014 follow-up study have gained national attention. This study suggests that people with chronic, complete spinal cord injuries may be able to develop intentional, functional movement with epidural stimulation. In the words of the authors, “We have uncovered a fundamentally new intervention strategy that can dramatically affect recovery of voluntary movement in individuals with complete paralysis even years after injury.”

<sup>1</sup> [Effect of epidural stimulation of the lumbosacral spinal cord on voluntary movement, standing, and assisted stepping after motor complete paraplegia: a case study](#)

<sup>2</sup> [Altering spinal cord excitability enables voluntary movements after chronic complete paralysis in humans](#)



The Morph™ is the world's first ever foldable wheelchair wheel! This foldable wheel is designed to fit all wheelchairs that accommodate a wheel with a quick release axle. The wheel will be supplied complete with the rim, tire and hand rim, and the hand rim is specially designed to fold with the wheel. Other features:

- 24" wheel expanded (32" x 12.5" folded)
- 265 lbs weight capacity
- 7.5 lbs weight per wheel (solid tire)
- Passed all RESNA/ANSI impact, curb drop and double drum testing standards
- Travel without being limited by storage space—even in taxis
- Fits in overhead bins, closets and even under your seat during flights



- Change the tires without complex tools
- Reduce the painful strain on your shoulders when transferring into cars

SOURCE: <http://www.morphwheels.com>

# TECHNOLOGY

The Handy Bar is a tool designed to offer more support as individuals get out of the car. Good for users who weigh up to 300 pounds and need assistance with balance or stability.

To use, insert the handle into the u-shaped door striker on the vehicle door frame. The Handy Bar easily locks into place and can be used on both the driver and passenger's side.

Also features a seat belt cutter and window breaker for emergencies.

The new Metro Car Handle Plus (right) offers a flashlight for greater visibility at

night. It can support users up to 500 pounds.

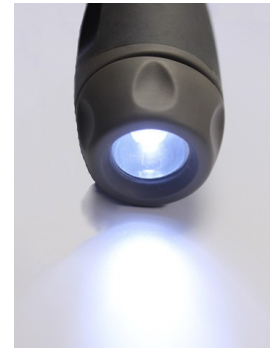
The Handy Bar and the Metro Car Handle Plus fits most cars in the U.S. and stores easily when not in use

SOURCE: <http://stander.com/>

*The Handy Bar*



*Metro Car Handle Plus*



The [University of Alabama at Birmingham Spinal Cord Injury Model System \(UAB-SCIMS\)](http://www.uab.edu/sci) provides Pushin' On twice annually as an informational resource for people with spinal cord injury (SCI). Pushin' On is available to subscribers via email and to everyone via the UAB-SCIMS website at [www.uab.edu/sci](http://www.uab.edu/sci). UAB-SCIMS Program Director: Amie B McLain, MD. Editor: Phil Klebine, MA

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