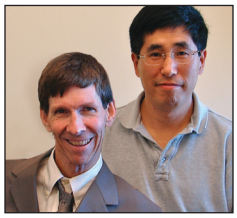
Research is the key.

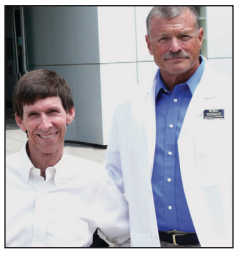
THE CURE COMMITMENT: Cure Medical donates 10% of net income to medical research in pursuit of a cure for spinal cord injuries and central nervous system disorders.

Cure Medical proudly supports multiple research facilities nationwide in their pursuit of a cure for SCI and CNS/D – including research which lead to a historic scientific breakthrough:

Successful Regeneration Corticospinal Tract



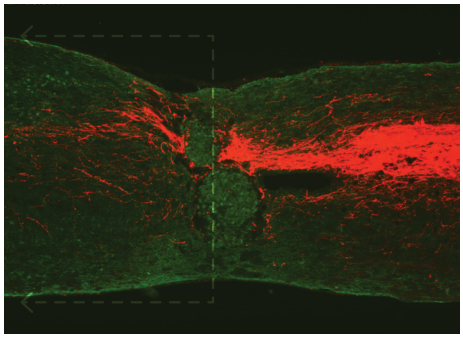
Bob Yant, Cure Medical Founder, with Zhigang He, PhD, BM (above) and Oswald Steward, PhD (below)



Neuroscientist and Associate Professor of Neurology at Harvard University, **Zhigang He, PhD, BM** studies the cellular and molecular mechanisms involved in axon degeneration and regeneration. Much of his work focuses on the corticospinal tract (CST) which are the nerves in the brain and spinal cord that control movement.

In an extraordinary breakthrough, Dr. He has discovered a way to induce the regeneration of corticospinal tract in the injured central nervous system.

Collaborating with **Oswald Steward, PhD**, Director of the Reeve-Irvine Research Center, (University of California, Irvine), Dr. He deleted the pTEN protein in mice, thereby controlling the signalling pathway that successfully induced new growth of the CST nerves. This seminal finding may bring about ways to treat and cure the debilitating consequences of human spinal cord injury at the time of injury and later.

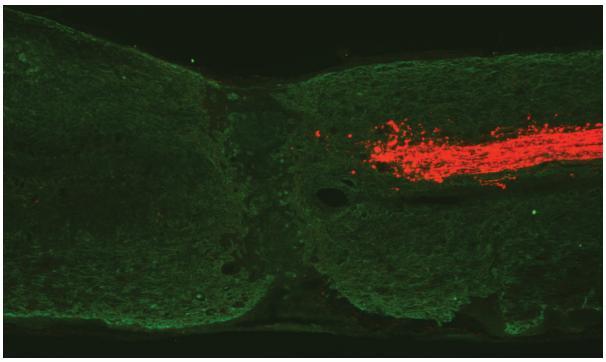


This cross section of a mouse spinal cord (stained green) shows CST nerves (stained red) growing beyond the lesion site (left of dotted line) indicating successful regeneration.

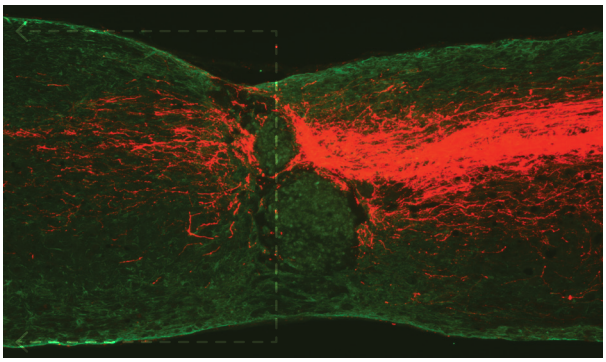
In addition to supporting multiple research facilities, Cure Medical supports groups in pursuit of a cure for SCI and CNS/D, including the Christopher and Dana Reeve Foundation, Life Rolls On, the Miami Project, the Quad Foundation, and Research for a Cure.

The Phosphatase and Tensin Homolog (pTEN) Gene

The pTEN protein is a type of enzyme which acts as part of a chemical pathway that signals cells to stop dividing and triggers cells to undergo a form of programmed cell death – putting a halt on new nerve growth. By deleting pTEN from the nerve cells in the mouse brain, Dr. He successfully encouraged CST connections to regenerate.



Before pTEN-deletion, CST nerves end at the lesion site in the spinal cord.



After pTEN-deletion, CST connections are evident beyond the lesion site.

Unprecedented Breakthrough

For decades many claims of progress have been made towards a cure for paralysis. No research has ever regenerated the CST nerves, which are essential to controlling voluntary movement. The discovery by Dr. He marks the first breakthrough in CST regeneration. According to Dr. Steward, *"This is totally new. Everyone we talk to says the kind of growth that we are seeing is unprecedented. Scientists have been trying to regenerate the pathway for spinal cord injury for literally one hundred years, but this is the first time there has been significant success in getting CST connections to regrow"*.

What's Next

In their on-going collaborative efforts, Drs. He and Steward are seeking to discover whether pTEN deletion will lead to restoration of motor function in mice with spinal cord injury. Further research will also explore the optimal time frame and drug-delivery system for the therapy.

Since Cure Medical donates 10% of net income to research, individuals contribute to scientific advances simply by using the Cure Catheter™ and Cure Catheter™ Closed System. Additionally, it is possible to specifically support "The CST Regeneration Project", with a donation payable to UC Irvine Foundation at Reeve-Irvine Research Center, 2107 Gillespie Neuroscience Research Facility, Irvine, CA 92697-4292, Attention: Tanya Cusak.

Cure Medical, 3700 Newport Blvd., Suite 301, Newport Beach, CA 92663
phones 800.570.1778 or 949.723.0364 • fax 949.723.0564 • www.curemedical.com

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