

Basis for Hope and Rationale for Government Support of Spinal Cord Injury Research

Many members of the spinal cord injury community gathered in Washington DC on April 12, 2005 to ask Congress to pass the Christopher Reeve Paralysis Act (CRPA), to establish a spinal cord injury clinical trial network, and to encourage the National Institutes of Health to encourage more spinal cord injury research.

Quality of Life. The CRPA proposes that Federal government agencies such as the NIH and CDC form research centers to bring clinicians and scientists together to work on improving the quality of life of people with spinal cord injury and other causes of paralysis. Many technologies are now available to prevent and reverse problems shared by most people with paralysis, including bowel and bladder dysfunction, muscle and bone atrophy, cardiovascular and endocrine problems, decubitus ulcers, neuropathic pain, autonomic dysreflexia, artificial respiration, immobility and access. While many groups are working on these problems, these centers will bring them together to apply these technologies to improve care and the quality of lives of people with paralysis.

Spinal Cord Injury Clinical Trial Network. Dozens of therapies have been reported to restore function in animal models of spinal cord injury. Many therapies have already been applied to humans. Clinical trials are being carried out or planned, including olfactory ensheathing glial (OEG) cell transplants, stem cell transplants (bone marrow, umbilical cord blood, neural stem cells), anti-Nogo antibodies (IN-1), Nogo receptor blockers, blockade of intracellular messengers mediating the Nogo receptor (Cethrin), increasing intracellular messengers that enhance regeneration (cAMP), enzymes to dissolve extracellular proteins that stop regeneration (chondroitinase), and growth factors (such as Glial Derived Neurotrophic Factor or GDNF). Many clinical trials are being carried out overseas. The pharmaceutical and biotechnology industry is just beginning to invest in clinical trials. The establishment of a spinal cord injury clinical trial network will greatly facilitate the testing and movement of these therapies from laboratory into clinical trials in the United States.

Spinal Cord Injury Research. For most of human history, scientists and clinicians believed that the spinal cord could not regenerate and that lost function could not be restored to people after spinal cord injury. The past decade of research has shattered this dogma. Today, most scientists believe that the spinal cord can be regenerated and remyelinated. However, much still needs to be done to develop therapies for clinical trial. Recent animal studies suggest that combination therapies are more effective than individual therapies in restoring function. These promising therapies need to be better understood and optimized for clinical trials. Ethical and scaleable sources of cells for transplantation must be developed. Encouraging the National Institutes of Health to place a higher priority on spinal cord injury research will maintain the "pipeline" of therapies for clinical trials and improve the likelihood of successful clinical trials.

The achievement of restorative therapies for spinal cord injury and other paralyzing conditions will be one of the greatest achievements of human history. For too many years, we have considered spinal cord injury to be an irreversible condition. The scientists are ready, the people are ready, and the world is ready. By investing now in paralysis centers to improve quality of life, a clinical trial network to test promising new therapies, and spinal cord injury research to provide better therapies, we can accomplish this laudable goal. Christopher Reeve sought these goals. Let us honor him by making his dream come true.

Wise Young, Ph.D., M.D., Professor II & Chair
Department of Cell Biology & Neuroscience
W. M. Keck Center for Collaborative Neuroscience
Rutgers, the State University of New Jersey
604 Allison Road, Piscataway, NJ 08854-8082
tel: 732-445-2061, fax: 732-445-2063
email: young@biology.rutgers.edu, <http://sciwire.com>