



DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

National Institutes of Health
Bethesda, Maryland 20892

August 2, 1996

TO: The Secretary

FROM: Director, NIH

SUBJECT: NIH Plan for Spinal Cord Research

Per your telephone request to me, attached is the NIH plan for research in spinal cord injury and regeneration, in response to the President's initiative on spinal cord research.

A handwritten signature in black ink, appearing to read "H. Varmus".

Harold Varmus, M.D.

Attachment

NIH PLAN FOR RESEARCH IN SPINAL CORD INJURY AND REGENERATION

ISSUE

In response to the President's initiative in spinal cord research, the National Institutes of Health has undertaken a plan to commit an additional \$10 million over the next year to research in spinal cord injury and regeneration. This initiative represents an increase of 20 percent over the current NIH budget committed to this field of research. The NIH effort will identify and support research grant applications submitted during FY 1996 that would not have been supported due to budget constraints. The NIH will also identify new areas of investigation to be funded through new applications during the coming fiscal year and will encourage new investigators to enter the field of spinal cord injury and regeneration research.

BACKGROUND

Spinal Cord Injury. Every year, 10,000 Americans' spinal cords are permanently injured as a result of traffic accidents, falls, sports injuries, gunshot wounds, and other trauma. Spinal cord injury can happen to anyone at any age. In the 1950s, spinal cord injury was often fatal; in the 1990s, the prognosis for spinal cord injury patients is more optimistic. Because of research leading to new and better treatments, the average length of a hospital stay and rehabilitation has declined from 137 days in 1974 to 73 days in 1993. Nevertheless, in the United States today, 200,000 people are, to varying degrees, living without being able to sense cold, heat, pressure, or touch and without the ability to walk, move, or even breathe on their own as a result of spinal cord injury.

Biology of the Brain and the Spinal Cord. The central nervous system—the “central processing unit” of the body—consists of both the brain and the spinal cord. The brain is the “command center,” while the spinal cord is the “highway” along which messages travel. The brain and the spinal cord are built of nerve cells, or neurons. Each neuron has a cell body from which long branches, called axons, convey information. This information system transmits sensations such as touch, temperature, and pain; conveys instructions for movement; and controls breathing, heart activity, digestion, and the urinary and reproductive systems. Severe spinal cord injury can permanently disrupt sensation, movement, or other vital body functions.

Unlike many other cells in the body, those of the central nervous system do not readily regenerate. Why? Neuroscientists have been seeking the answer to this question for many years. Neuroregeneration, or the formation of new neurons, is believed to be key to treating spinal cord injury. Research in central nervous system injury and neuroregeneration is progressing along many lines of inquiry.

THE NIH PLAN

The NIH will take the following steps in carrying out the President's initiative to increase funding for spinal cord injury and regeneration research:

- *Funding through the NIH Director's Discretionary Fund.* The NIH Director's Discretionary Fund allows the NIH Director to respond to emerging research opportunities and public health priorities. In FY 1996, the Director will commit \$2.791 million from the Fund to 12 meritorious new research projects that would not otherwise have been supported. These projects encompass a broad range of animal and human research that seeks to understand the spinal cord's ability to transmit movement and sensation and the changes in neuron function and structure that result from spinal cord injury. These projects will also explore the role of the inflammatory and immune responses to injury as well as approaches to minimizing damage and developing innovative treatments. An additional \$200,000 will be committed from the Discretionary Fund to support four Shannon awards, grants that provide short-term funding for promising investigators. These investigators will examine how nerve cells change after injury, how injury affects non-neuronal cells that support normal neuron function, and how developing neurons are guided to the tissue they innervate.
- *Additional FY 1996 Efforts.* The National Institute of Neurological Disorders and Stroke, the principal supporter of spinal cord research at the NIH, will commit \$981,000—a substantial portion of the Institute's remaining FY 1996 funds—to award a center grant to study central nervous system trauma and edema and loss of blood that usually accompany spinal cord injury. The NIH Institutes will also commit an additional \$690,000 to co-fund the 12 research projects and 4 Shannon awards supported from the Director's Discretionary Fund.
- *FY 1997 Initiatives.* To engage the best investigators in neuroscience and neurology in identifying promising new directions for research, the NIH will sponsor a workshop on emerging concepts in spinal cord injury research on September 30 and October 1, 1996. The \$120,000 cost of the workshop will be funded from the FY 1996 Director's Discretionary Fund. The workshop will consist of presentations regarding ongoing basic and clinical research related to spinal cord injury and discussions of unanswered research questions and promising avenues of research that may lead to the answers. Following the workshop, the NIH will issue a Program Announcement calling for new applications in areas identified as most promising. Approximately \$5.3 million will be set aside by the participating Institutes to fund the most meritorious projects in FY 1997.

Most projects begun in FY 1996 carry commitments in future years. Therefore, while the FY 1996 commitment to the spinal cord research initiative is \$4.782 million, there will also be \$4.2 million invested in the second year of the research projects in FY 1997. This \$4.2 million is in addition to the \$5.3 million to be invested through the FY 1997 Program Announcement.