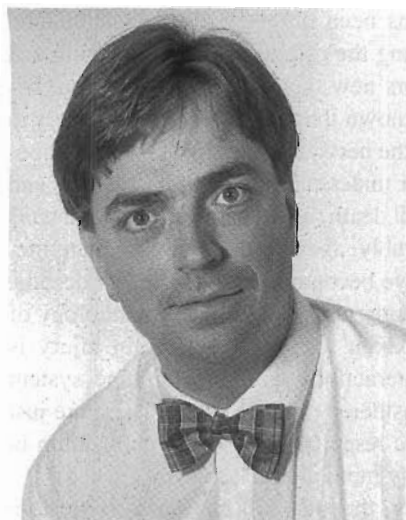


## Editorial

### New editorial office and publisher



Dr. Bernard A. Sabel

This issue of *Restorative Neurology And Neuroscience* marks a change of leadership and publishing house for our journal. I have inherited the duties of Dr. Donald G. Stein who has decided to retire from his post as RNN's Editor-in-Chief. As a consequence, the editorial office has been moved from Emory University,

Atlanta, USA, to the University of Magdeburg in Magdeburg, Germany. In addition, IOS Press of the Netherlands has taken over the publication of RNN from Elsevier Publishers. With this change it is time to reflect on the past accomplishments and future directions of RNN.

Cajal's dictum that "everything may die, nothing may be regenerated" has had a lasting influence on neuroscience. The desire to understand the structure and function of the nervous system in exquisite detail has inspired many generations of neuroscientists over the last two centuries. Their inspiration and hard work has transformed neuroscience into a highly regarded scientific enterprise which has recently made contributions to our understanding of the natural world at a breathtaking pace. While a superordinate goal of neuroscience research is to enhance our knowledge about nervous system structure and function, if one were to ask neuroscientists why they are engaged in research, many would state that their final goal is to eventually find new therapeutic strategies to reduce the suffering of patients afflicted with neurological disorders such as Alzheimer's Disease, Parkinson's Disease, spinal cord and head injury or multiple sclerosis.

Let us remember the declaration by U.S. President George Bush in 1989 of the "Decade of the Brain". In the resolution of the Congress the goals of brain research are stated clearly and in a very concise way. The declaration, printed on

page 130, helps guide us to the most important goals of neuroscience research and many of the tasks specified in the declaration are directly relevant to the mission of RNN.

While a major mission of neuroscience is to develop approaches to the treatment of brain and spinal cord injury and while many papers are regularly published on the subject, there had been no neuroscience journal before 1989 that offers a communication forum specifically dedicated to nervous system restoration and repair. Therefore, with vision and enthusiasm Dr. Donald G. Stein in 1989 founded RNN, an international and interdisciplinary journal. On behalf of all the past members of the editorial board, the previous and the new publisher, and all the authors who contributed to RNN, I would like to give my sincere thanks to Dr. Stein for his numerous and outstanding contributions to the field of brain restoration.

The first book to comprehensively examine central nervous system plasticity and its role in recovery of function was published as a result of a conference organized by Dr. Stein and held at Clark University in Worcester, Massachusetts in 1973. This conference symbolizes a conceptual breakthrough (conference proceedings: D.G. Stein, J.J. Rosen and N. Butters, eds. "Plasticity and Recovery of Function in the Central Nervous System", Academic Press, New York). It was not until the 1980s that the field of brain restoration really advanced rapidly, and Dr. Stein, through his various learned articles and books, has been one of the driving forces behind the "scientific revolution" in neuroplasticity which led to a Kuhnian "paradigm shift". Through his work Dr. Stein increased the awareness that the brain possesses considerable plasticity potential and that it is not as "fixed and immutable" as many scientists might have believed.

Dr. Stein's idea of launching RNN was innovative, courageous and widely noted. As founder of the journal he will always have a special role in RNN's future and we will always be grateful to him for his vision and courage in fostering the advancement of the field of restoration of brain functions, not only through his own research but also through founding RNN. Dr. Stein has worked for almost one decade to develop RNN and with great respect and admiration everyone will understand his feeling that he has done his share and has earned a respite from being at the journal's helm.

Since 1989, RNN has been published by Elsevier Science Publishers but was recently sold. The new Publisher, IOS-Press of the Netherlands, has asked me to become the new Editor-in-Chief of RNN and it is with great honor that I am accepting this opportunity. I hope that – together with the joint effort of all the editorial board members – we will be able to carry on Dr. Stein's great vision for brain restoration. Only with everyone's help will it be possible to lead the journal into uncharted frontiers of neuroscience and to make it a premier scientific reference source.

The scope of the journal has been, and will remain, to foster the development and evaluation of innovative therapeutic interventions for the treatment and cure of CNS disorders through a better understanding of neurological diseases and endogenous "repair" mechanisms. By emphasizing behavioral outcome measures, the journal's manuscript policy has already in the past clearly been directed toward clinical application and behavioral research. As the reader can learn from the accompanying editorial of the outgoing Editor-in-Chief, one of Dr. Steins's goals was to foster behavioral outcome measures of brain plasticity. RNN will maintain a special focus in behavioral and clinical studies, but since molecular research has richly informed our efforts to describe and understand restoration of brain functions in recent years, molecular research will be an increasingly important subject for RNN in the future.

By the time RNN was founded in 1989, the public had developed a deep interest in the neurosciences and the announcement that the 1990s would be the "Decade of the Brain" in the USA was a highly effective way to show the growing stature of neuroscience in the larger community. Indeed, the public's interest is well-placed; the last two decades have demonstrated the enormous capacity of the central nervous system to repair itself after injury and paved the way towards finding new therapeutic strategies. With regard to the issue of brain restoration, transplantation of neuronal tissue and the application of trophic factors in particular were proposed as new therapies for CNS disorders. Today we not only have important new insights into the healing capacities of the brain and spinal cord but novel, innovative and effective therapeutic strategies are now being developed for human application. At least some have already found their way to routine clinical application.

Several hallmark developments contributed to our current understanding of neuroplasticity which, over the years, led to a paradigm shift: (a) the observation of recovery of behavioral functions after various types of brain injury, (b) the discovery of axonal sprouting and regeneration of adult neurons when favorable conditions are created, (c) the development of the neuronal transplantation techniques which led to structural and functional repair and (d) the discovery of nerve growth factor which not only led to the Nobel Prize award to Rita Levi-Montalcini and Stanley Cohen but it has inspired the pharmaceutical industry to search for new drugs.

To get a feeling for the scope of RNN, several newly emerging fields of scientific inquiry can be cited: for exam-

ple, studies of brain and spinal cord-injured animals show that there is a remarkable degree of spontaneous recovery of function within days and weeks following the injury, and we need to better understand the neurobiological basis of this recovery process. New therapeutic approaches such as brain tissue transplantation and neuroprotective agents have also been developed in animal models of stroke and neurotrauma and they have subsequently been tested in human beings. Axonal regeneration has been observed in the mammalian CNS and by investigating the role of growth enhancing and growth inhibiting factors new therapeutic strategies are being pursued. It is also known that there are different ways in which cells may die in the nervous system, **necrosis** and **apoptosis**. Through a better understanding of the **molecular** and biochemical basis of cell death, novel neuroprotective agents will be found. Most notably, agents acting on glutamate-mediated neurotoxicity have become known in the last decade. It is becoming increasingly clear that the neuropathology of cell death and diffuse axon loss following brain injury is rather complex and interactions with the immune system will also have to be considered in more detail. These are just a few examples of basic research suitable for publication in RNN, but there are many more as well.

In the clinical setting, the standard approach to "restore functions" today is the replacement of lost neurotransmitters or manipulating their receptors as exemplified by the L-DOPA treatment in Parkinson's Disease. In recent years this strategy has been supplemented by efforts to block the self-destruction of nervous system tissue and to enhance the function of surviving neurons. Observations of reorganization of functions in the injured brains of animals and humans provides a new theoretical bases for brain restoration. Rehabilitation efforts will increasingly make use of well proven training protocols for the treatment of behavioral functions such as locomotion, memory or vision. Thus, therapeutic strategies for neurological disorders may either favorably manipulate the neuropathological cascade of injury, promote better use of residual structures and functions, or take advantage of true "restoration"-potential as best shown by studies of neuronal sprouting and regeneration.

In the 1970s, when Donald Stein proposed that deficits after brain injury can recover, few investigators believed it. At that time, the idea appeared too far removed from the generally accepted notion of neuronal specificity and a rigid structure-function theoretical framework. What appeared then to merely be a "curiosity" can almost be considered main stream neuroscience today.

The mission of RNN is to offer a forum of communication for all those interested in the field of brain restoration and plasticity. RNN plans not only to publish original research contributions but it will also include review papers, announcement of specialized meetings and funding information. As most papers in brain restoration are usually published in general neuroscience journals (*European J. of Neuroscience*, *J. Neuroscience*, *Neuroscience*, *Neuron* etc.), RNN fills an important niche that is directly relevant to the clinical sciences.

RNN is currently the only neuroscience journal that covers the variety of subjects that share as their common goal the development of strategies to facilitate recovery from CNS injury. It is hoped that through a better understanding of the underlying pathology and the empirical testing of new therapies, opportunities may be found to alleviate the suffering that results from diseases of the brain and spinal cord. By exploring the frontiers of central nervous system functions and its response to injury, disorders such as Alzheimer's and Parkinson's Disease, stroke and traumatic brain injury, multiple sclerosis and paralysis following spinal cord injury, to name just a few, may be treated in novel, more effective ways. RNN has the goal to promote and support this research effort.

It is expected that the investigation of brain plasticity and repair will gain increasing importance and acceptance in the

neurological and psychiatric sciences. The aim of RNN is to create a visible focus in this field of neuroscience and I am pleased to say that many of the most distinguished scholars in neuroplasticity research have agreed to participate on the editorial board of RNN. Together, through a joint effort, we will be able to accomplish an important and honorable scientific task: to help the field of nervous system restoration move forward. In so doing, we hope ultimately to help alleviate the suffering of patients with brain or spinal cord injury.

September, 1997

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## 103 STAT. 152

**Joint Resolution**

To designate the decade beginning January 1, 1990, as the “Decade of the Brain.”

Whereas it is estimated that fifty million Americans are affected each year by disorders and disabilities that involve the brain, including the major mental illnesses; inherited and degenerative diseases; stroke; epilepsy; addictive disorders; injury resulting from prenatal events, environmental neurotoxins and trauma; and speech, language, hearing and other cognitive disorders;

Whereas it is estimated that treatment, rehabilitation and related costs of disorders and disabilities that affect the brain represent a total economic burden of \$305,000,000 annually;

Whereas the people of the Nation should be aware of the exciting research advances on the brain and of the availability of effective treatment of disorders and disabilities that affect the brain;

Whereas a technological revolution occurring in the brain sciences, resulting in such procedures as positron emission tomography and magnetic resonance imaging, permits clinical researchers to observe the living brain noninvasively and in exquisite detail, to define brain systems that are implicated in specific disorders and disabilities, to study complex neuropeptides and behavior as well as to begin to learn about the complex structures underlying memory;

Whereas scientific information on the brain is amassing at an enormous rate, and the field of computer and information sciences has reached a level of sophistication sufficient to handle neuroscience data in a manner that would be maximally useful to both basic researchers and clinicians dealing with brain function and dysfunction;

Whereas advances in mathematics, physics, computational science, and brain imaging technologies have made possible the initiation of significant work in imaging brain function and pathology, modeling neural networks and simulating their dynamic interactions;

Whereas comprehending the reality of the nervous system is still on the frontier of technological innovation requiring a comprehensive effort to decipher how individual neurons, by their collective action, give rise to human intelligence;

**PUBLIC LAW 101-58-JULY 25, 1989**

Whereas fundamental discoveries at the molecular and cellular levels of the organization of the brain are clarifying the role of the brain in translating neurophysiologic events into behavior, thought, and emotion;

Whereas molecular biology and molecular genetics have yielded strategies effective in preventing several forms of severe mental retardation and are contributing to promising breakthroughs in the study of inheritable neurological disorders, such as Huntington’s disease, and mental disorders, such as affective illnesses;

Whereas the capacity to map the biochemical circuitry of neurotransmitters and neuro-modulators will permit the rational design of potent medications possessing minimal adverse effects that will act on the discrete neurochemical deficits associated with such disorders as Parkinson’s disease, schizophrenia and Alzheimer’s disease;

Whereas the incidence of neurologic, psychiatric, psychological, and cognitive disorders and disabilities experienced by older persons will increase in the future as the number of older persons increases;

Whereas studies of the brain and central nervous system will contribute not only to the relief of neurologic, psychiatric, psychological, and cognitive disorders, but also to the management of fertility and infertility, cardiovascular disease, infectious and parasitic diseases, developmental disabilities and immunologic disorders, as well as to an understanding of behavioral factors that underlie the leading preventable causes of death in this Nation;

Whereas the central nervous and immune systems are both signalling systems which serve the entire organism, and there are direct connections between the nervous and immune systems, and whereas studies of the modulatory effects of each system on the other will enhance our understanding of diseases as diverse as the major psychiatric disorders, acquired immune deficiency syndrome, and autoimmune disorders;

Whereas recent discoveries have led to fundamental insights as to why people abuse drugs, how abused drugs affect brain function leading to addiction, and how some of these drugs cause permanent brain damage;

Whereas studies of the brain will contribute to the development of new treatments that will curtail the craving for drugs, break the ad-

dictive effects of drugs, prevent the brain-mediated “high” caused by certain abused drugs, and lessen the damage done to the developing minds of babies, who are the innocent victims of drug abuse;

Whereas treatment for persons with head injury, developmental disabilities, speech, hearing, and other cognitive functions is increasing in availability and effectiveness;

Whereas the study of the brain involves the multidisciplinary efforts of scientists from such diverse areas as physiology, biochemistry, psychology, psychiatry, molecular biology, anatomy, medicine, genetics, and many others working together toward the common goals of better understanding the structure of the brain and how it affects our development, health, and behavior;

Whereas the Nobel Prize for Medicine or Physiology has been awarded to fifteen neuroscientists within the past twenty-five years, an achievement that underscores the excitement and productivity of the study of the brain and central nervous system and its potential for contributing to the health of humanity;

Whereas the people of the Nation should be concerned with research into disorders and disabilities that affect the brain, and should recognize prevention and treatment of such disorders and disabilities as a health priority; and

Whereas the declaration of the Decade of the Brain will focus needed government attention on research, treatment, and rehabilitation in this area: Now, therefore, be it Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That the decade beginning January 1, 1990, hereby is designated the “Decade of the Brain,” and the President of the United States is authorized and requested to issue a proclamation calling upon all public officials and the people of the United States to observe such decade with appropriate programs and activities.

Approved July 25, 1989

Legislative History-H.J. Res. 174 (S.J. Res. 173):

CONGRESSIONAL RECORD, Vol. 135 (1989):  
 June 29, considered and passed House.  
 July 13, considered and passed Senate.