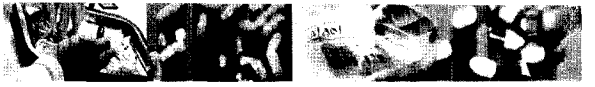

Keynote Lecture XI
Cell-based Therapies of Spinal Cord Injury

Wise Young
Rutgers, the State University of New Jersey

Dr Wise Young is director of the WM Keck Center for Collaborative Neuroscience and a professor at Rutgers, The State University of New Jersey. He obtained a bachelor of arts degree from Reed College, a doctorate from the University of Iowa and a medical degree from Stanford University. After a surgery internship at New York University and Bellevue Medical Center, he joined the neurosurgery department of NYU. In 1984, he became director of neurosurgery research. In 1997, Dr Young was recruited by Rutgers to establish and direct a world-class center for collaborative neuroscience.

Dr Young was part of the team that discovered and established high-dose methylprednisolone (MP), as the first effective therapy for spinal cord injuries. The 1990 work upended concepts that spinal cord injuries were permanent, refocused research and opened new vistas of hope. This team also played a major role in Andy Blight's signal work on 4-aminopyridine (4-AP), which shows significant promise for increasing nerve conductivity.

Dr Young developed the first standardized rat spinal cord injury model used worldwide for testing therapies, formed the first consortium funded by the National Institutes of Health (NIH) to test promising therapies, and helped establish several widely accepted clinical outcome measures in spinal cord injury research.

Dr Young founded and served as editor-in-chief of the Journal of Neurotrauma. He has served on advisory committees for the NIH, and the National Academy of Sciences, and served on advisory boards for many spinal cord injury organizations.

Well-known as a leader in spinal cord injury research, Dr Young has appeared on "20/20" with Barbara Walters and Christopher Reeve, "48 Hours", "Today", "Eye to Eye", NBC, Fox News, USA Today, CNN's news magazine with Jeff Greenfield. His work has been featured in a Life magazine's special edition, in USA Today, and in innumerable news, talk and print presentations throughout the world. His honors include the NIH Jacob Javits Neuroscience Award (1985-1992), Wakeman Award (1991), Tall Texan of the Year Award (1997), "Cure" Award in New York City (1998), the Trustees Award for Excellence in Research (2001), the 2002 Asian American Achievement Award, the Douglas Medal in 2003 for his work with the advancement of young women in the sciences, and the 2004 Elizabeth M Boggs Award for service to the disability community. In August 2001, TIME Magazine named Dr Young as "America's Best" in the field of spinal cord injury research.

Many cell transplant therapies improve functional recovery in animal spinal cord injury models. In the last two decades, over 1000 people with spinal cord injury have received cell transplants, including human fetal spinal tissues, adult and fetal olfactory ensheathing glia (OEG), fetal neural stem cells, adult and fetal Schwann cells, activated macrophage and bone marrow stem cell autografts, umbilical cord blood stem cells, pig fetal neural stem cells, nasal mucosa, and even shark embryo transplants. Although the beneficial effects of the transplants have been modest and variable to date, the safety record of cell transplant therapies has been remarkable with very few mortalities or neurological complications. Of the cell transplants, OEG has yielded the best results to date. In the last three years, Dr Hongyun Huang in Beijing has transplanted human fetal OEG cells into over 400 patients with chronic spinal cord injury, finding that the transplants restored 4-8 sensory dermatomes and

1-2 motor levels below the injury site. Surprisngly, the return of function began occurring several days after transplantation, too rapid to be due to regeneration or remyelination. We recently found that OEG transplants improved locomotor function rats within several days when transplanted late after spinal cord injury. Very recently, several animal studies have suggested that combination cell transplant and growth factor therapies produce better regeneration and recovery of function than cell transplants or growth factor. The implications of the rapid recovery, use of combination cell transplant/growth factor therapies, and the need for immunosuppression will be discussed.