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The Potential of Stem cell therapy for brain repair and regeneration following Neurotrauma

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Traumatic brain injury (TBI) is a major health problem worldwide. Despite improving survival rate after TBI, currently, there is no effective treatment to improve neural structural repair and functional recovery of TBI survivors. It is now well established that in the mature mammalian brain, new neurons are generated throughout life in the neurogenic regions of the subventricular zone (SVZ) and the dentate gyrus (DG) of the hippocampus. The extent and the function of adult neurogenesis under neuropathological conditions have been explored in varying types of disease models in animals. Increasing evidence has indicated that this endogenous neurogenesis may play regenerative and reparative roles in response to CNS injuries or diseases. In the field of brain trauma, neural regeneration either through stimulating endogenous neural stem cells or through stem cell transplantation has gained increasing attention. This presentation will discuss recent development of strategies we and others have explored to facilitate the repair and regeneration of the injured brain following TBI through manipulating endogenous neurogenesis and through optimizing neural transplantation.

Biography

Dong Sun received a degree of Bachelor of Medicine from Chongqing Medical University, Chongqing, China, in 1986 and a M.Sc. in Radiology from West China Medical University, Chengdu, China in 1989. Following residency training in Radiology, He became an attending Radiologist for a number of years in China before pursuing Ph.D. training in Experimental Neuropathology at School of Medicine, Southampton University, United Kingdom in 1995. After completing Ph.D. in 1999, He did postdoctoral trainings, first in the Department of Pharmacology at Uniformed Services University of Health Sciences, Maryland, and then in the Department of Neurosurgery at Medical College of Virginia, Virginia Commonwealth University (MCV/VCU), Virginia, before becoming an Assistant Professor in 2004 and then Associate Professor in 2010 in MCV/VCU. His research interest is to investigate strategies that can facilitate brain repair and regeneration following traumatic brain injury (TBI) and aging. Using varying type of rodent TBI models as well as Alzheimer's transgenic model, her studies examine the association of TBI, aging, neuroinflammation with neurogenesis and cognitive function. Her search is well supported by NIH and other foundation grants.

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