Stem cells can differentiate into neurons and may be useful post-stroke therapeutics

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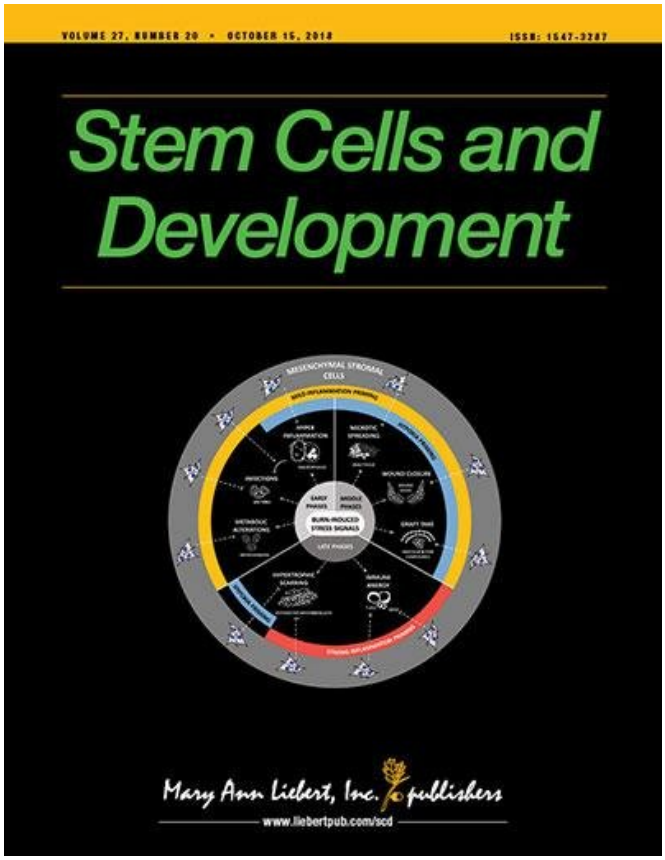

Stem Cells and Development is dedicated to communication and objective analysis of developments in the biology, characteristics, and therapeutic utility of stem cells, especially those of the hematopoietic system. Credit: Mary Ann Liebert, Inc., publishers

Researchers have performed a careful comparison between locally generated, ischemia-induced, multipotent stem cells (iSCs) and bone marrow-derived mesenchymal stem cells (BM-MSCs) in an effort to determine which cell type has greater central nervous system (CNS) repair capacity. Their results show that the iSC characteristics make them more promising candidates as CNS injury therapeutics. The study is published in *Stem Cells and Development*, a peer-reviewed journal from Mary Ann Liebert, Inc., publishers.

Takayuki Nakagomi, MD, Ph.D., with colleagues from the Hyogo College of Medicine and from the Kwansei Gakuin University School of Science and Technology, Hy?go, Japan, coauthored the article titled "Comparative Characterization of Ischemia-Induced Brain Multipotent Stem Cells with Mesenchymal Stem Cells: Similarities and Differences". Although evidence has shown that grafted mesenchymal stem cells can improve neuronal function after a stroke, most of these cells never reach the target injured brain regions. However, a regional induction of stem cells occurs after ischemia that may provide greater opportunity to restore neuronal function. Thus, the authors of this study extracted iSCs from the ischemic regions of post-stroke mice and collected and prepared MSCs from bone marrow. They then compared the gene and protein expression, multipotency, and neuronal differentiation capacity of the two stem cell types. Ultimately, many similarities were identified between MSCs and iSCs, but only iSCs exhibited the potential for neuronal differentiation, thus establishing a case for their exploration as CNS therapeutic agents.

"Having recently demonstrated that ischemia-induced multipotent stem cells are present within the post-stroke human brain, the authors here seek to clarify how the potential of this fascinating cell population differs from that of mesenchymal stem cells." says Editor-in-Chief Graham C. Parker, Ph.D., The Carman and Ann Adams Department of Pediatrics, Wayne State University School of Medicine, Detroit, MI.

More information: Rika Sakuma et al, Comparative Characterization of Ischemia-Induced Brain Multipotent Stem Cells with Mesenchymal Stem Cells: Similarities and Differences, *Stem Cells and Development* (2018). DOI: 10.1089/scd.2018.0075

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