Does brain tissue regeneration depend on maturity of stem cells used for transplantation?

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New research has shown that the success of transplanting stem cells into the brain to regenerate tissue damaged by stroke may depend on the maturity of the neuronal precursor cells used for transplantation. A study demonstrating the significant impact of human neuronal precursor cell maturity on cell survival after transplantation into stroke-injured rate brains is published in *Tissue Engineering*, Part A.

Coauthors Samantha Payne, Priya Anandakumaran, Cindi Morshead, and Molly Shoichet, University of Toronto and Balazs Varga and Andras Nagy, Mount Sinai Hospital, Toronto, Canada, evaluated the survival of three subpopulations of human induced pluripotent stem cell (iPC)-derived neuronal precursor cells: early-, mid-, and late-differentiated cells. Significantly more early- and mid-differentiated neuronal stem cells were present in the rat brains one week after transplantation compared to late-differentiated cells. Furthermore, the mid-differentiated cells were the most likely to mature and become neurons, according to the results reported in the article entitled "In Vitro Maturation of Human iPSC-Derived Neuroepithelial Cells Influences Transplant Survival in the Stroke-Injured Rat Brain."

"Temporality as a variable in tissue engineering has rarely been explored. This is an excellent addition to our understanding of cell behavior in a therapeutic circumstance," says *Tissue Engineering* Co-Editor-in-Chief Peter C. Johnson, MD, Principal, MedSurgPI, LLC and President and CEO, Scintellix, LLC, Raleigh, NC.

More information: Samantha L. Payne et al, In Vitro Maturation of Human iPSC-Derived Neuroepithelial Cells Influences Transplant Survival in the Stroke-Injured Rat Brain, *Tissue Engineering Part A* (2017). DOI: 10.1089/ten.tea.2016.0515

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