

# Neuroscientist comments on stem cell study's success in helping primates with Parkinson's

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A University of South Florida neuroscientist reports that the cutting-edge research study of human stem cells in primates with Parkinson's disease is compelling on several fronts – particularly how the transplanted cells did their job of easing disease symptoms.

Paul R. Sanberg, DSc, PhD, Distinguished Professor of Neurosurgery and Director of the Center for Aging and Brain Repair at USF Health, wrote the commentary “Neural Stem Cells for Parkinson's Disease: To Protect and Repair” published July 9 in the “Early Edition” online version of journal *Proceedings of the National Academy of Sciences of the United States of America*. The expert commentary is a companion piece to the study conducted by Gene Redmond and colleagues at Yale and Harvard Universities and the Burnham Institute.

That NIH-funded study showed that only a small number of stem cells turned into dopamine-producing cells – not enough to improve the primates' function by replacing missing neurons. Instead, some stem cells turned into astrocytes, a supportive brain cell that produces neuron-nourishing chemicals. The researchers also identified in the brains of the primate recipients a significant amount of dopamine-producing neurons that were not derived from stem cells. The results suggest that stem cells may actually trigger the brain's own self-repair mechanisms by pumping out molecules that boost nerve survival and blood vessel development and decrease neural degeneration.

“We at the Center for Aging and Brain Repair at USF Health have been

arguing, for some time now, that stem cells are important for brain repair because they provide growth factors and because they send signals to the brain to help it repair itself,” Dr. Sanberg said. “This study in primates showed the same effects -- that the stem cells are there to act as facilitators of repair versus the original hypothesis that stem cells are transplanted to merely replace an injured cell.”

Dr. Sanberg said the study has relevance to all audiences. “This was one of the first studies to look at stem cells in primates with Parkinson’s disease. It’s the first step in translating that research,” he said. “We hear about new sources of stem cells monthly, but how we take those cells and treat disease is going to be a significant amount of translational work. This is one of the first studies that starts that process - looking at primates before going into people with Parkinson’s disease.”

While the transplanted cells appeared not to form tumors following transplant, Dr. Sanberg said the translational research in primates raises questions that need to be addressed before moving to human trials, including determining the most effective cell dosing and brain sites to target.

“Pending further preclinical studies,” he concludes in the commentary, “the results so far from the current study are supportive for developing a safe and effective stem cell treatment for Parkinson’s disease.”

Dr. Sanberg’s commentary and the study it highlights will also be published in the magazine edition of *PNAS*. The global journal has been a resource for multidisciplinary research since 1914. Its online edition, where Dr. Sanberg’s commentary appears this week, receives nearly 6 million e-visitor “hits” per month. Content includes research reports, commentaries, reviews, perspectives, colloquium papers, and actions of the Academy. Coverage in *PNAS* spans the biological, physical, and social sciences.

Source: University of South Florida Health

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