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Stem cell research targets Parkinson's  
Top researcher fears politics may hamper progress

By [BILL HENDRICK](#)  
The Atlanta Journal-Constitution  
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More than a million Americans who suffer from the debilitating neurological disorder Parkinson's disease are likely to be among the first to benefit from promising advances in embryonic stem cell research, unless political controversy keeps slowing down the process, scientists said Monday.

"We want to replenish the population of nerve cells that are dying in the brains of Parkinson's victims," Dr. Ole Isacson, a professor of neurology and neuroscience at the Harvard Medical School, said in an interview. "The encouraging recent scientific finding is that human embryo [embryonic] stem cells can be grown into the specific dopamine neuron that dies in Parkinson's, and we know that it can be transplanted and restore function in animal models [rats]."

Parkinson's is caused by the degeneration of neurons, or brain cells, that control movement. That results in a shortage of the brain-signaling chemical dopamine, which is why, Isacson said, scientists are working now to grow new dopamine-secreting neurons from embryonic and adult stem cells.

Isacson spoke with four other neuroscientists at a symposium at the annual meeting of the Society for Neuroscience at the Georgia World Congress Center.

Researchers said that while stems cells have shown promise as a treatment for diseases that involve degeneration of brain cells, such as Alzheimer's and Lou Gehrig's disease, the most promising research has involved Parkinson's.

Embryonic stem cells are taken from early embryos, mostly obtained from fertilized eggs left over from in vitro fertilization clinics. They have captivated scientists with their ability to develop into any tissue in the human body, including all of 300 specific nerve cell types that make up the brain.

Adult stem cells are less flexible and can't transform into as wide a range of alternate tissue.

"If we manage to grow stem cells at will," Isacson said, "we could have a supply that could help a large number of patients and reconstitute their [brain] circuitry." In experiments he has done in the past, some Parkinson's

sufferers have been helped but not cured of their disease, he said. Realistically, he said, it will be "years and maybe decades" before the technology can be used, mainly for political reasons that get in the way of research.

In 2001, President Bush decided that existing embryonic stem cell lines, about 78 lines, were eligible for federal funds, but that work with newly harvested lines was not. A "line" is all the cells that grow from one original stem cell.

Isacson said scientists "have proof" from work done in the late 1990s and research in Canada last year that dopamine cells from aborted fetuses "can survive in patients' brains for 14 years. "What's important is that we know this dopamine cell will reconnect and make for better connections in the brain, and that's a very great leap in understanding."


Challenging researchers is how embryonic stem cells can be made to grow into a specific cell. They said in a statement that they are trying to identify the "biological signals" that tell stem cells to become dopamine-producing brain cells.

Though U.S. researchers are struggling with the president's limitations on their field, experiments are going full force in Canada and Europe. In the United States, development of dopamine cell replacement therapy will depend on finding and producing alternative sources of cells for transplants, Isacson said.

Parkinson's disease is the second most common neurodegenerative disorder in the United States, surpassed by Alzheimer's disease. It afflicts more than 1 million people in the United States, Isacson said. Symptoms include tremors or trembling, general slowness of movement, stiffness or rigidity of muscles and difficulty maintaining gait and balance.

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