

Generating dopamine via cell therapy for Parkinson's disease

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In Parkinson's disease, the loss of dopamine-producing cells in the midbrain causes well-characterized motor symptoms. Though embryonic stem cells could potentially be used to replace dopaminergic (DA) neurons in Parkinson's disease patients, such cell therapy options must still overcome technical obstacles before the approach is ready for the clinic. Embryonic stem cell-based transplantation regimens carry a risk of introducing inappropriate cells or even cancer-prone cells.

To develop cell purification strategies to minimize these risks, Dr. Lorenza Studer and colleagues at Memorial Sloan Kettering Cancer Center in New York developed three different mouse lines to fluorescently label dopaminergic neurons at early, mid, and late stages of differentiation.

Their data suggest that mouse [embryonic stem cells](#) induced to the mid stage of neuronal differentiation are best suited for transplantation to replace dopaminergic neurons. Further, their work identified new genes associated with each stage of neuronal differentiation.

Their results in the [mouse model](#) system help define the differentiation stage and specific attributes of embryonic stem cell-derived, dopamine-generating cells that hold promise for cell therapy applications.

More information: Identification of embryonic stem cell - derived midbrain dopaminergic neurons for engraftment, *Journal of Clinical Investigation*.

Provided by Journal of Clinical Investigation

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