

From stem cell to brain cell - new technique mimics the brain

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A new technique that converts stem cells into brain cells has been developed by researchers at Lund University. The method is simpler, quicker and safer than previous research has shown and opens the doors to a shorter route to clinical cell transplants.

By adding two different [molecules](#), the researchers have discovered a surprisingly simple way of starting the [stem cells](#)' journey to become finished [brain cells](#). The process mimics the brain's natural development by releasing signals that are part of the normal development process. Experiments in animal models have shown that the cells quickly adapt in the brain and behave like normal brain cells.

“This technique allows us to fine-tune our steering of stem cells to different types of brain cells. Previous studies have not always used the signals that are activated during the brain's normal development. This has caused the transplanted cells to develop tumours or function poorly in the brain”, says Agnete Kirkeby, one of the authors of the study.

Since the method effectively imitates the brain's own processes, it reduces the risk of tumour formation, one of the most common obstacles in stem cell research. The quick, simple technique makes the cells mature faster, which both makes the transplant safer and helps the cells integrate better into the brain. The results of the study bring stem cell research closer to transplant trials in the human brain.

“We have used the new protocol to make dopamine neurons, the type of

neuron that is affected by Parkinson's disease, and for the first time, we are seriously talking about these [cells](#) as being good enough to move forward for transplantation in patients. The next step is to test the process on a larger scale and to carry out more pre-clinical safety tests", explains Malin Parmar, research team leader.

Provided by Lund University

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