

Stem Cell Therapy for Parkinson's Disease

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Stem Cell Therapy for Parkinson's Disease Latest News

Researchers at Kyoto University conducted a Phase I/II clinical trial to assess the safety and side effects of stem cell therapy using dopaminergic progenitors derived from human induced pluripotent stem cells (iPSCs).

About Parkinson's Disease

- **Parkinson's disease** is a **neurodegenerative disorder** that causes the **progressive loss of dopamine-producing neurons** in the brain.
- **Dopamine** is a critical **neurotransmitter** responsible for regulating **motor functions**.
- The conventional treatment mainly involves **dopaminergic medications**, but these **do not restore lost neurons** and may have **long-term side effects**.

Induced Pluripotent Stem Cells (iPSCs)

- **iPSCs** are **pluripotent stem cells** generated from **adult somatic cells** (like skin or blood).
- They are **reprogrammed** to an embryonic-like state, allowing them to develop into **any human cell type**.

- Used in:
 - **Diabetes** (converted into **beta cells**),
 - **Leukaemia** (to generate new blood cells),
 - **Neurological diseases**.
- iPSCs are valuable in **drug testing**, **disease modelling**, and **transplantation medicine**.

Stem Cells

- **Stem cells** are **undifferentiated primitive cells** capable of developing into **specialised cells** like blood, muscle, or liver cells.
- Their ability to **self-renew and differentiate** makes them vital for **regeneration and repair**.
- Found in:
 - **Bone marrow**,
 - **Gastrointestinal tract** (divide regularly),
 - Less active in organs like the **pancreas** or the **heart** (divide under specific conditions).

Types of Stem Cells: Embryonic vs Adult Stem Cells

Feature	Embryonic Stem Cells	Adult Stem Cells
Potency	Pluripotent (any body cell)	Multipotent (limited types)
Source	Embryo (blastocyst stage)	Mature tissues (e.g., bone marrow)
Growth in lab	Can be easily cultured	Difficult to isolate & expand
Ethical concerns	High	Low

Source: **TH**

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