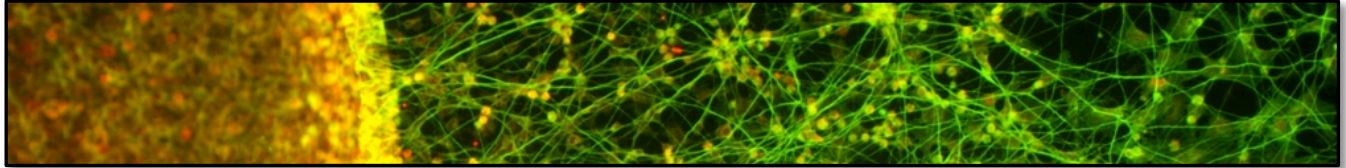


Pluripotent Stem Cells: Modelling Nervous System Diseases

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Background: Our lab uses **human pluripotent stem cells** to model nervous system diseases. To achieve this we reprogram fibroblasts from patients, that carry known mutations, back into a pluripotent stem cell state. These induced pluripotent stem cells can then be differentiated into neural cells and used to study neurodegenerative diseases (Figure 1).

Interests: The main focus of the lab is to investigate the signalling pathways required for the specification of precise neural cell types from the pluripotent state. In particular we are interested in understanding the development of mesencephalic dopaminergic neurons, which are the major cell type affected in Parkinson's disease, and the process involved in their neurodegeneration.

Techniques:

- Reprogramming of fibroblasts to generate new stem cell lines.
- Culture and differentiation of human pluripotent stem cells
- Immunofluorescence and molecular biology techniques.
- Production of lentiviruses for gene delivery.

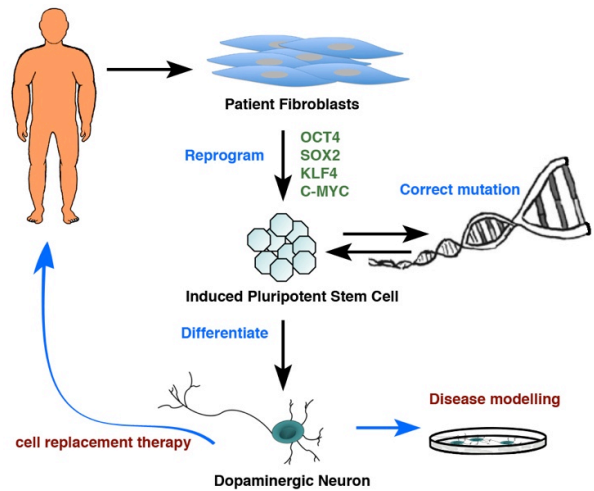


Figure 1: Patient fibroblasts can be reprogrammed back into a pluripotent stem cell state.

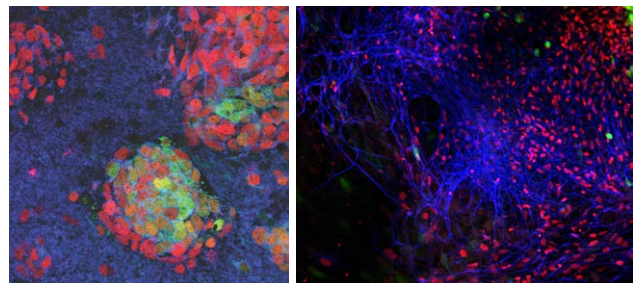


Figure 2: Floor plate progenitors derived from human pluripotent stem cells and their subsequent differentiate into dopaminergic neurons.

Available projects: **1)** Investigating the signalling pathways involved in the development of mesencephalic dopaminergic neurons. **2)** Generation of new pluripotent stem cell lines by reprogramming fibroblasts derived from Parkinson's disease patients.