

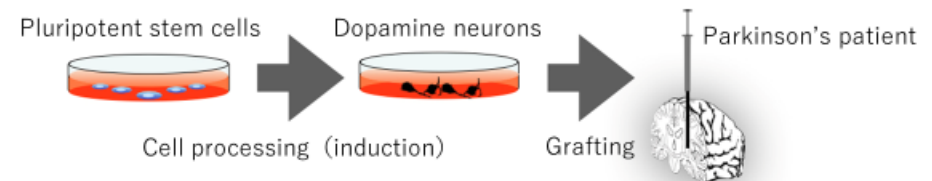
Non-invasive monitoring of human pluripotent stem cell differentiation into midbrain dopaminergic neural cells

MORIZANE Asuka

Junior Associate Professor, Clinical application,
Center for iPS Cell Research and Application, Kyoto University

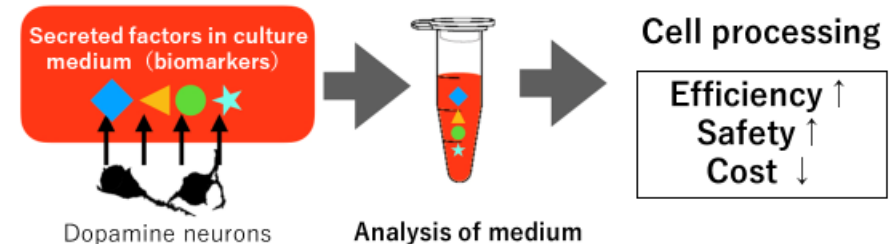
Cell therapy using iPS cells for Parkinson's disease began in 2018 as a doctor-led clinical trial in Japan. Dopaminergic neurons required for transplantation into patients must be carefully prepared from human iPS cells. The quality of these cells is the key to success of the treatment. As the cell production has many uncertainties, it requires delicate quality control with high cost. This research is a collaboration project with Dr. Tilo Kunath at the University of Edinburgh. In this research, we focus on biomarkers secreted from cells into culture medium during the differentiation process. We will identify molecules unique to developing dopaminergic cells and investigate those biomarkers in real time during their formation. The project aims at developing technology that makes the cell production safer and more effective at low cost. It is known that pluripotent stem cells, iPS cells and ES cells, have a unique differentiation character that varies between cell lines. Experiments with multiple cell lines in Japan and the United Kingdom are expected to yield more versatile and robust research results. Through this research, we aim to evolve and promote regenerative medicine for Parkinson's disease.

Cell therapy for Parkinson's disease



Identify secreted factors under proper dopamine neural induction

→ Establish non-invasive monitoring system for cell processing



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