

Session/Poster#

Presenter

B01

Victoria Sook Keng Tung
School of Graduate Studies Student

Advisor(s): Dr. Oleg Evgrafov, Department of Cell Biology

Cellular Composition of Middle Turbinate and Development of Biological Models for Schizophrenia

Schizophrenia is a complex neurodevelopmental disease with a multifactorial etiology. To better elucidate the underlying molecular mechanisms, appropriate biological models are essential. Previously, our lab suggested using for that purpose cell cultures with neural progenitor properties developed from the olfactory neuroepithelium, where neurodevelopment is ongoing all life. Later the same cell cultures were also developed from the middle turbinate. In this study, we used single-cell transcriptomics to annotate all cell types in the middle turbinate and olfactory neuroepithelium and identified the cell type that served as an ancestor to neural progenitor cell lines. By comparing the scRNA-seq data of neural progenitor cell lines derived from patients with schizophrenia and control groups with biopsy samples from middle turbinate and olfactory neuroepithelium, we identified 14 unique cell types in the middle turbinate, including cells with neural progenitor properties. Our findings suggest that neural progenitor cell lines derived from the middle turbinate are a suitable biological model for studying schizophrenia etiology, as they closely matched one of the cell types in the embryonic brain. In summary, our study provides a novel insight into the cellular composition of the middle turbinate, which can be a useful source of biological models for schizophrenia. As such, identifying the cellular makeup of the middle turbinate, as well as the neural progenitor cell lines derived from it, will allow us to create a more relevant disease model to study schizophrenia's etiology.