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Elucidate the neurodevelopmental mechanisms of schizophrenia using cultured neural progenitor cells derived from olfactory neuroepithelium (CNON cells)

The etiology of schizophrenia begins during the neurodevelopment of the brain. While brain development in patients with schizophrenia is impossible to study, neurodevelopment is ongoing in the olfactory neuroepithelium of every adult throughout life and can be used as a model to study aberrations in the neurodevelopmental program. Using single-cell sequencing, we compare and analyze nasal biopsy samples from schizophrenia patients with cultured neural progenitor cells derived from olfactory neuroepithelium (CNON cells). We demonstrate that biopsy samples contain a specific cell type which is a sole precursor of CNON cells. We also compare CNON cells with fetal brain cells and identified similar cell type using gene expression analysis. Thus, this demonstrates that CNON cells are a good model to investigate the neurodevelopmental mechanisms of schizophrenia.