

In schizophrenia research, a path to the brain through the nose

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A significant obstacle to progress in understanding psychiatric disorders is the difficulty in obtaining living brain tissue for study so that disease processes can be studied directly. Recent advances in basic cellular neuroscience now suggest that, for some purposes, cultured neural stem cells may be studied in order to research psychiatric disease mechanisms. But where can one obtain these cells outside of the brain?

Increasingly, schizophrenia research is turning to the nose. Strange as it may seem, the idea makes sense because the olfactory mucosa, the sense organ of smell in the nose, is continually regenerating new [sensory neurons](#) from "adult" stem cells. These neurons are among the very few [nerve cells](#) outside of the skull that connect directly to nerve cells in the brain.

Over several decades, researchers found that these cells can be collected directly by obtaining a small tissue sample, called a biopsy. By taking small pieces of olfactory tissue from the nose, researchers of this new study were able to gain access to the stem cells from patients with schizophrenia and compare them to cells from healthy individuals.

"We have discovered that patient cells proliferate faster - they are running with a faster speed to their clock controlling the cell cycle - and we have identified some of the molecules that are responsible," explained Dr. Alan Mackay-Sim from the National Centre for Adult Stem Cell Research in Brisbane, Australia, an author of the study. The findings clearly indicate that the natural cell cycle is dysregulated in

individuals diagnosed with schizophrenia.

"This is a first insight into real differences in patient cells that could lead to slightly altered brain development," Mackay-Sim added. This is an important finding, as scientists are already aware of many developmental abnormalities in the 'schizophrenia brain'.

Dr. John Krystal, editor of [Biological Psychiatry](#), commented: "The current findings are particularly interesting because when we look closely at the clues to the neurobiology of psychiatric disorders, we find new and often unexpected mechanisms implicated."

More information: The article is "Altered Cell Cycle Dynamics in Schizophrenia" by Yongjun Fan, Greger Abrahamsen, John J. McGrath, and Alan Mackay-Sim ([doi: 10.1016/j.biopsych.2011.10.004](https://doi.org/10.1016/j.biopsych.2011.10.004)). The article appears in *Biological Psychiatry*, Volume 71, Issue 2 (January 15, 2012)

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