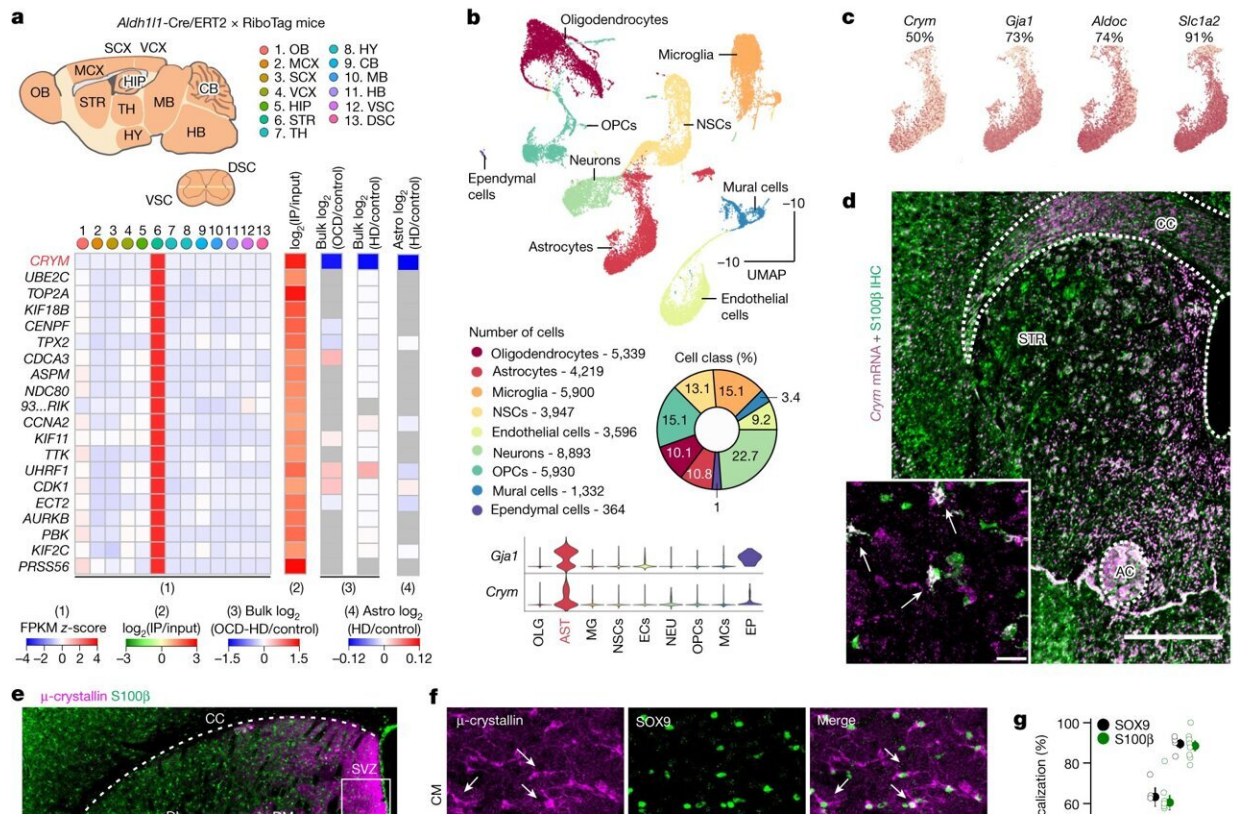


Specific support cells in brain can regulate behaviors involved in some human psychiatric disorders

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A molecularly defined and allocated *Crym*⁺ population of striatal astrocytes. Credit: *Nature* (2024). DOI: 10.1038/s41586-024-07138-0

UCLA Health researchers have discovered a group of specialized

support cells in the brain that can regulate behaviors associated with human neuropsychiatric disorders.

The [study](#), published in the journal *Nature*, focused on a group of cells known as astrocytes—star-shaped cells that tile the [central nervous system](#) and provide a support structure for the neural communication networks.

While neurons have long been understood to have primary control of [behavior](#), the study found that a distinct group of astrocytes located deep in the central region of the brain, known as the central striatum, may also regulate communications between neurons. Unlike other astrocytes, this group of astrocytes express the gene *Crym*, which encodes for the protein known as μ -crystallin. This protein has been associated with several human diseases including [neuropsychiatric disorders](#), but its influence on [brain function](#) has remained largely unknown.

"Several years ago the lab identified that astrocytes in the striatum express *Crym*. It was my job to find out what it did. By reducing expression of this gene in astrocytes of the central striatum, I uncovered mechanisms related to a specific behavior called perseveration," said Matthias Ollivier, the study's first author and postdoctoral scholar at the David Geffen School of Medicine at UCLA.

In the study, researchers genetically reduced the expression of the gene in this group of astrocytes in mice. Studying the behavior of mice, the researchers found they had significant increases in repetitive behavioral patterns or activities that served little purpose or made it difficult for the mice to transition to other activities. This behavior, known as perseveration, is associated with neurological and psychiatric disorders including autism, [obsessive-compulsive disorder](#), Huntington's disease and Tourette syndrome.

The study found that Crym-positive astrocytes in the central striatum regulated neurotransmitter communication at synapses from the cortex to the center of the brain within the [striatum](#).

"At a basic biology level, the study provides evidence that distinct types of [astrocytes](#) have important neurobiological functions," said Baljit Khakh, the senior author of the study and professor of physiology and neurobiology at the David Geffen School of Medicine at UCLA.

Researchers say the findings could be starting points in the development of potential therapies to alleviate perseveration in different disorders. Further research is underway to understand the interactions and signaling cascades regulated by μ -crystallin.

More information: Matthias Ollivier et al, Crym-positive striatal astrocytes gate perseverative behaviour, *Nature* (2024). [DOI: 10.1038/s41586-024-07138-0](#)

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