

Neuroscience alumna publishes in major journal

Chris McCauley

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Shreya Malhotra The

University of Alabama at Birmingham's College of Arts and Sciences and Heersink School of Medicine offer five unique interdisciplinary programs that prepare students for the career fields of the future. Although these programs are relatively new, several cohorts of students have already attained their degrees. As students continue to graduate from these innovative programs, the College of Arts and Sciences will highlight their achievements and next steps.

Shreya Malhotra is a Spring 2020 graduate of the Undergraduate Neuroscience Program. The program allows students to build knowledge and prepare for medical school. It also provides students with laboratory- and literature-based research experiences. Malhotra excelled in the program, and, during her senior year, she published her research in the Journal of Neuroscience, a top-tier journal in the field of neuroscience. Malhotra was the first author on the paper which is entitled, "Climbing Fiber-Mediated Spillover Transmission to Interneurons Is Regulated by EAAT4." The co-authors on the paper include Gokulakrishna Banumurthy, Reagan L. Pennock, Jada H. Vaden, Izumi Sugihara, Linda Overstreet-Wadiche and Jacques I. Wadiche.

Malhotra and her faculty advisor Jacques Wadiche, Ph.D., professor in the Department of Neurobiology in the Heersink School of Medicine, recently crafted a significance statement on the research. According to Malhotra and Wadiche, "Although the cerebellum appears to be a uniform structured region, it exhibits a striped pattern of gene expression aptly named after a protein called Zebrin. These stripes may delineate different connectivity with the rest of the brain allowing the cerebellum to act beyond its designated role in motor control. Here we find that the protein levels of EAAT4, a glutamate transporter, follow the Zebrin pattern to cause differences in glutamate signaling across stripes. These results show a new functional difference in cerebellar information processing between stripes and may have implications for understanding the role of the cerebellum in motor control and cognition."

Malhotra is now pursuing her M.D./Ph.D. at Stanford's School of Medicine.

"To publish a first author paper as an undergraduate is a notable achievement, but Shreya's accomplishment is even more significant considering her work was published in one of the top journals in our field," said Cristin Gavin, Ph.D., co-director of the Undergraduate Neuroscience Program. "This indicates not only the high quality of the science, but also the impact of the intellectual advance."

You can access the paper here.

[Climbing Fiber-Mediated Spillover Transmission to Interneurons Is Regulated by EAAT4 | Journal of Neuroscience \(jneurosci.org\)](https://doi.org/10.1523/JNEUROSCI.4512-20.2020)