



# Astrocytes May Play an Important Role in How the Brain Processes Information

Friday, November 2, 2018

According to a study conducted by the National Institutes of Health, astrocytes, a type of brain cell, play an important role in regulating the flow of information required for day-to-day activities.

The results, published in [Proceedings of the National Academy of Sciences of the United States of America](#) (PNAS) on Oct. 29, showed that blocking the ability of astrocytes to regulate the enzyme thrombin resulted in thinner sheaths of myelin and wider gaps between segments of myelin. Myelin, an insulation material, increases the speed at which neurons relay signals.

In the experiment, researchers blocked the ability of astrocytes to regulate thrombin in mice and rats. As a result, the signal speeds of neurons decreased by 15%, enough to impair the reflexes of the mice in a vision-based test.

“Myelin can be located far from the neuron’s synapse, where signals originate,” said the National Institute of Child Health and Human Development’s Dipankar Dutta, Ph.D., the lead author of the study, in a [press release](#). “We wanted to understand how myelin, and the cells that regulate it, help synchronize signals that come from different areas of the brain.”

Dr. Sinisa Pajevic, chief of [CIT’s Mathematical & Statistical Computing Laboratory](#), contributed to the study by using a computational model to predict the expected speeding up or slowing down of neural signals. He also developed a method to measure the arrival time of neural signals in the optic nerves of the mice.

Funding for this work was provided by National Institute of Child Health and Human Development (NICHD), the Center for Information Technology (CIT), the National Institute of Neurological Disorders and Stroke (NINDS), and the National Cancer Institute (NCI). Additional support for this research was provided by the Department of Defense through the Henry M. Jackson Foundation for the Advancement of Military Medicine.