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“My lab studies an enigmatic set of cells called glia, which are involved in many nervous system injuries and diseases. Most treatment efforts have focused on neurons, but determining how glial cells function normally and become dysfunctional in disease is critical for development of new and improved treatments for such disorders.”

The human brain consists of an incredibly diverse set of cells, and each cell type fulfills highly specialized functions in cellular networks of dazzling complexity. While much research has focused on understanding the circuits formed by neurons, glial cells account for up to 90 percent of cells in the human brain and around half of its volume. These cells were long believed to play a merely passive, supportive role. However, over the past few years it has become clear that glia make crucial contributions to the formation, operation and adaptation of the nervous system. Additionally, glial cells are involved in many injuries and diseases, including cancer, Alexander’s disease and amyotrophic lateral sclerosis.

Nimmerjahn’s laboratory currently focuses on the development of new, integrated tools for study of glia–neuron and glia–vascular interactions in superficial and deep regions of the healthy and diseased brain. This work promises to yield better understanding of glial cells’ role in information processing, regulation of vascular dynamics, and brain disorders that either result from, or are exacerbated by, defective or disordered glial function, such as migraine, stroke or cancer.

For more information, please visit www.salk.edu/faculty/nimmerjahn

From left to right: Yusuf Tufail, Pavel Shekhtmeyster, Christopher Aprea, Axel Nimmerjahn, Charles Clark, Da Meng