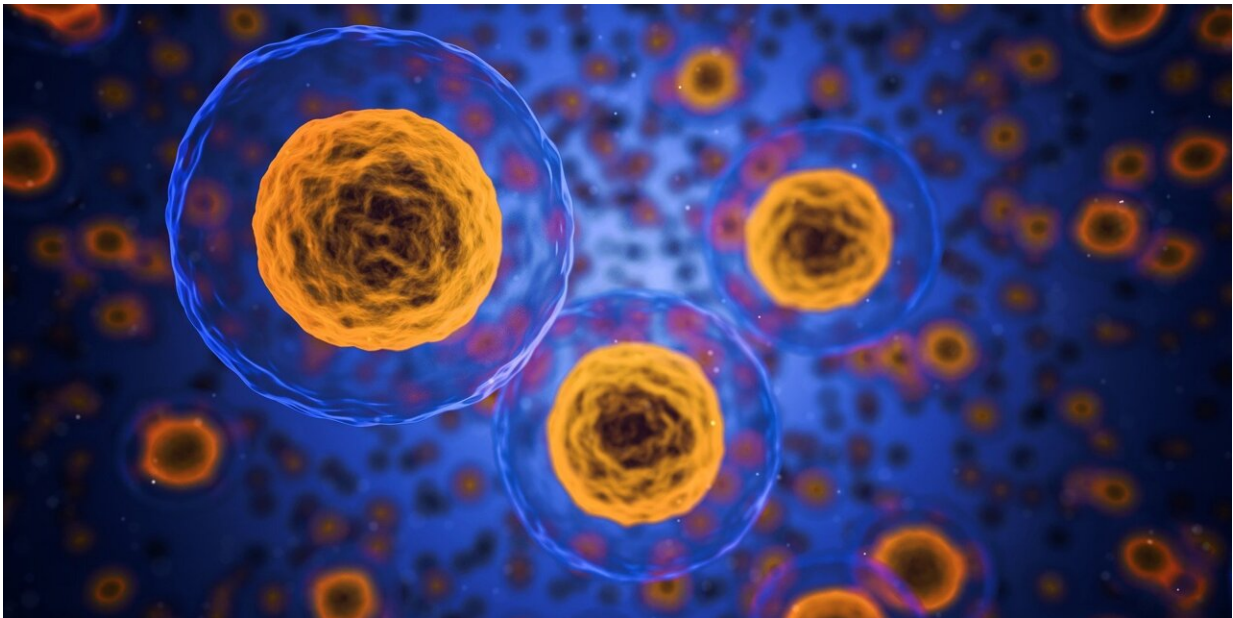


# Researchers discover new way inflammation impacts cell communication

August 14 2024, by Christina Griffiths

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Indiana University School of Medicine researchers have made significant progress in understanding how cells communicate during inflammation. The study, [recently published](#) in *Proceedings of the National Academy of Sciences*, was conducted over a period of five years and focused on the molecules that enable cells to function during inflammation, particularly in the central nervous system where diseases like multiple sclerosis occur.

"Communication is key in any relationship, even at the level of cells that cause disease," said Mark Kaplan, Ph.D., chair of the Department of Microbiology and Immunology at the IU School of Medicine and senior author of the study.

"The [molecules](#) that allow cells to function in inflammation are essentially text messages sent between or within cells. We have been studying what cells get those text messages and how they respond in an inflammatory environment in the central nervous system that leads to diseases like multiple sclerosis."

The signaling molecule is called STAT4 and was previously believed to primarily function in T cells, which are part of the immune system. But the team found it plays a crucial role in [dendritic cells](#), a specific cell type that responds to extracellular text messages IL-12 and IL-23.

"Our work identified how STAT4 might be a viable target for treating inflammatory [disease](#) in the [central nervous system](#)," Kaplan said. "By understanding the [communication](#) between cells and the role of STAT4, we can potentially develop therapeutics to modify immune responses and alleviate the symptoms of diseases like multiple sclerosis."

The lead author of the study, Nada Alakhras, Ph.D., is a recent IU School of Medicine graduate who now works at Eli Lilly and Company. Other authors include Wenwu Zhang, Nicolas Barros, James Ropa, Raj Priya and Frank Yang, all from IU. and Anchal Sharma of Eli Lilly and Company.

**More information:** Nada S. Alakhras et al, An IL-23-STAT4 pathway is required for the proinflammatory function of classical dendritic cells during CNS inflammation, *Proceedings of the National Academy of Sciences* (2024). [DOI: 10.1073/pnas.2400153121](https://doi.org/10.1073/pnas.2400153121)

Provided by Indiana University School of Medicine

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