

Tulane Scientists Uncover New Pain-Signaling Switch

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Scientists from Tulane and other universities have discovered a new way that nerve cells communicate — by releasing an enzyme outside the cell that switches on pain signaling after injury. (Image from iStock)

Researchers at Tulane University, with a team of colleagues from eight other universities, have discovered a new nerve cell signaling mechanism that could transform our understanding of pain and lead to safer, more effective treatments.

The study, co-led by **Matthew Dalva**, the Phyllis M. Taylor Presidential Chair in Brain Science at Tulane, and Ted Price at the University of Texas at Dallas, reveals that neurons can release an enzyme outside the cell that switches on pain signaling after injury. The work, published in *Science*, offers

new insight into how brain cells strengthen their connections during learning and memory.

“This finding changes our fundamental understanding of how neurons communicate,” said Dalva, director of the **Tulane Brain Institute** and professor of cell and molecular biology in the **School of Science and Engineering**. “We’ve discovered that an enzyme released by neurons can modify proteins on the outside of other cells to turn on pain signaling — without affecting normal movement or sensation.”

“We were able to reveal a mechanism that has implications not just for pain, but for learning and memory across species.”

Matthew Dalva - School of Science and Engineering

Researchers found that nerve cells communicate outside the cell with the enzyme vertebrate lonesome kinase (VLK), which can alter proteins in the space between neurons, affecting how those cells send signals.

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