

Research team discovers link between sodium and migraines before pain occurs

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FAMU-FSU College of Engineering Associate Professor Sam Grant worked with Dr. Michael Harrington from Huntington Medical Research Institutes to show how sodium distribution is disturbed in the brain using high-powered magnets at the FSU-based National High Magnetic Field Laboratory. Credit: Florida State University

A Florida State University engineer and a team of researchers have found a link between migraines and how sodium is distributed through the brain, a finding that could be a key to future research on treatments for migraine sufferers.

Sam Grant, an associate professor in the FAMU-FSU College of Engineering, and Dr. Michael Harrington, director of neurosciences at Huntington Medical Research Institutes in California, have published a paper that describes how [sodium](#) distribution in the brain is disturbed in mammals even before pain or other [migraine](#) symptoms become visible.

The paper was published in the journal *Pain*.

"Migraines affect millions of people, and disproportionately women," Grant said. "Our work is an ongoing project to better understand them and then ultimately work toward improved treatment for [migraine sufferers](#)."

Grant and Harrington began collaborating a few years ago. Harrington often visited the FSU-headquartered National High Magnetic Field Laboratory to conduct research and knew Grant from his visits.

Grant uses a type of high field magnet at the lab—essentially a high-powered MRI—to investigate how illnesses work. Harrington explained his suspicions about the role sodium played in migraines and the two agreed to collaborate.

Using the high-powered magnets at the lab, they scanned rats' brains as they experienced migraines and noticed that there was increased sodium in the [brain](#) stem long before the rats showed any sign of having a migraine.

"The importance of these findings is that they further emphasize the role

of sodium increase early in migraines and help point to the region where migraine symptoms may be starting," Harrington said.

The researchers plan to continue their collaboration and delve into evaluations of the brainstem and ventricular system and also see whether current treatments on the market affect the sodium distribution process.

About 12 percent of Americans experience migraines, according to the National Institutes of Health. Scientists have found that a number of different health scenarios seem to trigger migraines including anxiety, stress, exposure to light and hormonal changes.

More information: Nastaren Abad et al. Dynamic sodium imaging at ultra-high field reveals progression in a preclinical migraine model, *PAIN* (2018). [DOI: 10.1097/j.pain.0000000000001307](https://doi.org/10.1097/j.pain.0000000000001307)

Provided by Florida State University

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