

# Researchers look into the brains of chronic itch patients

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It's long been known that scratching evokes a rewarding and pleasurable sensation in patients with chronic itch. Now, researchers in the Department of Dermatology and Temple Itch Center at Temple University School of Medicine (TUSM) may be closer to understanding why.

Using advanced fMRI imaging, the researchers looked at activity in the [brain](#) while 10 [chronic itch](#) patients and 10 healthy subjects scratched an itch. They found that areas of the brain involved in motor control and reward processing were more activated in chronic itch patients while they scratched. This overactivity may help explain the addictive scratching experienced by these patients. The study findings were

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"Chronic itch is a major symptom in dermatological diseases such as atopic eczema and psoriasis and a bothersome symptom in other diseases like end-stage renal disease," says Hideki Mochizuki, PhD, Assistant Professor of Dermatology at TUSM, and first author of the study initiated by Gil Yosipovitch, MD, Chair of Dermatology at TUSM, and Director of the Temple Itch Center.

"Despite being pleasurable at first, ongoing scratching can lead to an increase in the intensity of itch as well as pain and permanent skin damage," Dr. Mochizuki continues. "That is why it is important to understand the cerebral activity that may be inducing this pathological scratching behavior."

In a previous study by Dr. Yosipovitch's group, researchers investigated the cerebral mechanisms of scratching and its association with pleasure in healthy volunteers only.

According to Dr. Yosipovitch, this new study is the first to investigate [brain activity](#) during scratching in chronic itch patients.

During the study, itch was induced by applying cowhage (a plant) to the right forearms of patients with chronic itch and study participants without chronic itch. The patients were then imaged using fMRI while they scratched the itch. Researchers found that brain activity spiked in the chronic itch patients in the [supplementary motor area](#), premotor cortex, and [primary motor cortex](#) - areas that are associated with [motor control](#) and motivation to act. In addition, brain areas involved in reward circuit such as the striatum, cingulate cortex, caudate nucleus and orbitofrontal cortex were significantly more activated than in healthy subjects.

"Our findings may enable us to identify and advance the understanding of the brain network underlying the itch-scratch cycle in chronic itch patients," says Mochizuki. "This understanding could lead to new therapies for these patients."

Chronic itch affects millions of Americans and is defined as itching that lasts for more than six weeks. It may be located over the entire body, or it may be limited to a single area. The chances of developing chronic [itch](#) increase with age.

Provided by Temple University

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