

Blocking proteins could ease unrelenting poison ivy itch, mouse study shows

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Scientists at Duke Health and Zhejiang Chinese Medical University who are studying poison ivy rashes in mice have identified new potential drug targets that could one day lead to treating the aggravating itch in people.

The journal JCI Insight published the findings that identify two proteins and a neurotransmitter involved in poison ivy itch in mice. Blocking or suppressing the proteins and the receptor appeared to relieve poison-ivy itch in ways antihistamines and steroids cannot, said senior author Sven-Eric Jordt, Ph.D., an associate professor of anesthesiology, pharmacology and [cancer biology](#) at Duke.

The findings build on the team's previous research on how nerves help drive the body's response to urushiol, the irritant within the oily sap in plants including poison ivy, poison sumac and poison oak.

"There are about 10 million cases a year for which people seek [medical help](#) and often those people are given large doses of steroids or antihistamines that are only partially effective because only some of the itching is caused by the body's production of histamine," Jordt said. "It's these alternative pathways and receptors on nerves that together are also contributing to the itch sensation. Our studies show that if you block those signals, you can also alleviate the itch."

One of the three targets described in the research is the protein, thymic stromal lymphopoietin (TSLP), which [drug companies](#) are currently targeting to relieve asthma symptoms. When scientists injected an antibody for this protein in mice, it appeared to relieve their itching. They also describe the involvement of the [protein](#) endothelin 1 (ET-1) and the neurotransmitter serotonin.

The researchers believe the findings could lead to potential treatments for the estimated 75 percent of people in the U.S. who are allergic to plants that contain urushiol. For many people, the rash dissipates on its own, but the incessant itching often leads to scarring and even infection, Jordt said.

"Studies have shown that higher levels of carbon dioxide in the

atmosphere are creating a proliferation of poison ivy throughout the U.S.—even in places where it wasn't growing before," Jordt said. "When you consider doctor visits, the costs of the drugs that are prescribed and the lost time at work or at school, the societal costs are quite large."

"Our next step will be to look at [human skin](#) to see if we see the same activity and the same pathways," he said.

Provided by Duke University

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