

Burning pain and itching governed by same nerve cells

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We all know how hard it is not to scratch when we have an itch. But how can an itch be alleviated? In a new study published today in the prestigious journal *Neuron*, researchers at Uppsala University present the surprising finding that the same nerve cells that are active when we experience heat pain are also associated with itching.

There are disorders and conditions that entail increased itching and can be extremely troublesome for those suffering from it. The mechanisms behind itching are not well understood today. For one thing, what is it about scratching that relieves itching?

In the current study, which was performed on mice, the research team led by Professor Klas Kullander at the Department of Neuroscience examined the [nerve cells](#) that transfer heat pain. When these nerve cells had lost its capacity to signal, the mice reacted less to heat, as expected, but surprisingly they also started to itch incessantly.

"These findings link together pain from a burn with regulating sensitivity to itching, which was highly surprising and interesting," says Klas Kullander.

Extreme itching is very unpleasant and difficult to treat. For example, it is a common complication following operations and burns. [Eczema](#) and other skin disorders can also lead to general itchiness. Greater knowledge of the underlying factors paves the way for developing new forms of treatment for itching, for example, activating pain fibers to

reduce itching, which is supported by these findings.

"In the long run, and with the help of more research, we will hopefully be able to fully elucidate what nerve fibers conduct the itching itself, and then we will be able to extinguish the itch at the source," says Klas Kullander.

More information: Malin C. Lagerström, Katarzyna Rogoz, Bjarke Abrahamsen, Emma Persson, Björn Reinius, Karin Nordenankar, Caroline Ölund, Casey Smith, José Alfredo Mendez, Zhou-Feng Chen, John N. Wood, Åsa Wallén-Mackenzie, Klas Kullander.
VGLUT2-Dependent Sensory Neurons in the TRPV1 Population Regulate Pain and Itch, *Neuron*, Volume 68, Issue 3, 529-542.

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