

New possible strategy for treating chronic pain due to burns may help sufferers including veterans

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New research shows how second-degree burns cause hard-to-treat chronic pain, and this understanding may be key to treating these complications, common in war veterans. This research, published in *Physiological Reports*, suggests that burns cause changes to neurons in multiple parts of the spinal cord, even far from the injury site, which can contribute to chronic pain and other long-term complications.

Second degree burns initially only affects layers of the skin, specifically the top and second layers. More than 11 million individuals per year around the world suffer [burn](#) injuries severe enough to require hospitalization and long-term care.

Treatment of burns normally entails localised treatment at the site of the burn, but this doesn't address problems that the burn may cause in other parts of the body, such as the central nervous system (brain and [spinal cord](#)), which is crucial for fully treating the burn and possible neurological complications, such as [neuropathic pain](#).

Siraj Patwa and his colleagues at Yale University and the US Department of Veterans Affairs studied spinal cord neurons in a burn injury mouse animal model and found that the skin injury affected the structural connections between neurons. They also identified an important molecule in this problem called PAK1, which is involved with regulating these changes in the spinal cord.

An exciting discovery from this work was the identification of an existing clinical drug targeting PAK1, called Romidepsin, which is already used in [cancer treatment](#). One promising avenue of study is looking at "re-purposing" this drug for targeting [chronic pain](#) associated with burn injuries.

Andrew Tan, senior author on the study said:

"This research has exciting potential to provide a new avenue for speeding up the development of new treatments for long-lasting complications that often follow burn injury. Having a treatment that would not only treat the acute injury, but long-lasting complications could have a big impact on clinicians' treatment of burns, including battlefield injured-veterans."

More information: Siraj Patwa et al, Spinal cord motor neuron plasticity accompanies second-degree burn injury and chronic pain, *Physiological Reports* (2019). [DOI: 10.14814/phy2.14288](https://doi.org/10.14814/phy2.14288)

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