

New pain organ discovered in the skin

Date: August 15, 2019

Source: Karolinska Institutet

Summary: Researchers have discovered a new sensory organ that is able to detect painful mechanical damage, such as pricks and impacts.

FULL STORY

Researchers at Karolinska Institutet in Sweden have discovered a new sensory organ that is able to detect painful mechanical damage, such as pricks and impacts. The discovery is being published in the journal '*Science*'.

Pain causes suffering and results in substantial costs for society. Almost one person in every five experiences constant pain and there is a considerable need to find new painkilling drugs. However, sensitivity to pain is also required for survival and it has a protective function. It prompts reflex reactions that prevent damage to tissue, such as pulling your hand away when you feel a jab from a sharp object or when you burn yourself.

Researchers at Karolinska Institutet have now discovered a new sensory organ in the skin that is sensitive to hazardous environmental irritation. It is comprised of glia cells with multiple long protrusions and which collectively go to make up a mesh-like organ within the skin. This organ is sensitive to painful mechanical damage such as pricks and pressure.

The study describes what the new pain-sensitive organ looks like, how it is organised together with pain-sensitive nerves in the skin and how activation of the organ results in electrical impulses in the nervous system that result in reflex reactions and an experience of pain. The cells that make up the organ are highly sensitive to mechanical stimuli, which explain how they can participate in the detection of painful pinpricks and pressure. In experiments, the researchers also blocked the organ and saw a resultant decreased ability to feel mechanical pain.

"Our study shows that sensitivity to pain does not occur only in the skin's nerve fibres, but also in this recently-discovered pain-sensitive organ. The discovery changes our understanding of the cellular mechanisms of physical sensation and it may be of significance in the understanding of chronic pain," says Patrik Ernfors, professor at Karolinska Institutet's Department of Medical Biochemistry and Biophysics and chief investigator for the study.

Story Source:

Materials provided by **Karolinska Institutet**. Note: Content may be edited for style and length.

Journal Reference:

1. Abdo H, Calvo-Enrique L, Martinez Lopez J, Song J, Zhang MD, Usoskin D, El Manira A, Adameyko I, Hjerling-Leffler J, Ernfors P. **Specialized cutaneous Schwann cells initiate pain sensation**. *Science*, 2019 DOI: 10.1126/science.aax6452

Cite This Page:[MLA](#)[APA](#)[Chicago](#)

Karolinska Institutet. "New pain organ discovered in the skin." ScienceDaily. ScienceDaily, 15 August 2019. <www.sciencedaily.com/releases/2019/08/190815140834.htm>.

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