

## Study: Why cold is such a pain

June 14 2007

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German scientists have identified a key molecule that helps animals feel pain associated with low temperatures.

Katharina Zimmermann and colleagues at Erlangen-Nuremberg University determined a protein called Nav1.8 allows information to be transmitted along sensory nerve fibers in cold conditions. The molecule is a voltage-gated sodium channel, an integral membrane protein that allows sodium ions to pass through a neuron's outer membrane.

Although there are other voltage-gated sodium channels in sensory neurons, the researchers said Nav1.8 keeps working when the temperature drops -- in fact, they said its currents are actually larger in colder conditions. That might help explain why, although sensory acuity deteriorates at low temperatures, pain perception persists and cold stimuli themselves can be painful.

The research is reported in the journal *Nature*.

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Citation: Study: Why cold is such a pain (2007, June 14) retrieved 20 November 2023 from <https://medicalxpress.com/news/2007-06-cold-pain.html>

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