

# Menthol receptor also important in detecting cold temperatures

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The ion channel activated by menthol also detects a wide range of cold temperatures and relays the information to the brain, according to a study in *Nature* by Yale School of Medicine, the University of California at San Francisco, and the University of Wisconsin.

The finding solves the mystery of how important the ion channel TRPM8 is for alerting the body to cold temperatures.

“TRPM8 is the primary, if not sole, determinant of thermosensitivity in the cool range,” the researchers noted. “It also contributes to the detection of extreme cold, or temperatures below 15 C degrees.”

Cold, heat, sound, light, taste, and smell are detected and converted into neural impulses through the activation of receptors, which then propagate the signal by opening an ion channel. Once the channel is open, an electrical impulse travels to other neurons.

In this paper, Sven-Eric Jordt, assistant professor of pharmacology at Yale, and colleagues, found that isolated, cultured nerve cells that express TRPM8 react to cooling stimuli, but cells cultured from mice lacking TRPM8 do not. Also, mice engineered without TRPM8 are much less sensitive to cold than mice with TRPM8.

“TRPM8 does not seem to be the sole receptor responsible for detecting cold,” Jordt said. “The TRPM8 knockout mice sensed temperatures below 15 C degrees, which indicates the possible existence of another

pathway for detecting extreme cold.”

Source: Yale University

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