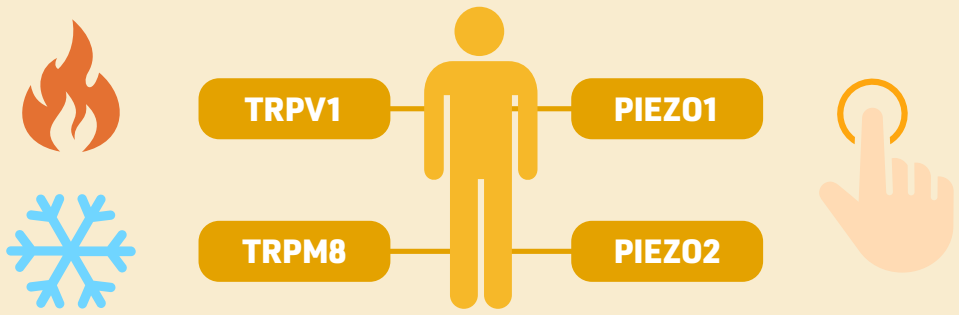
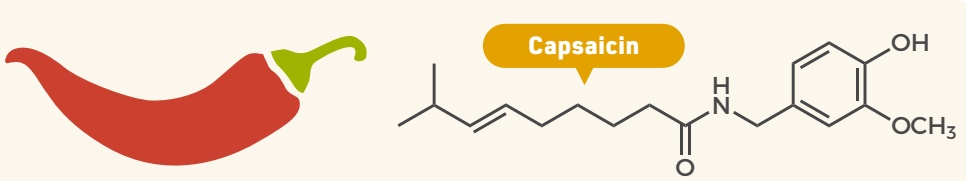
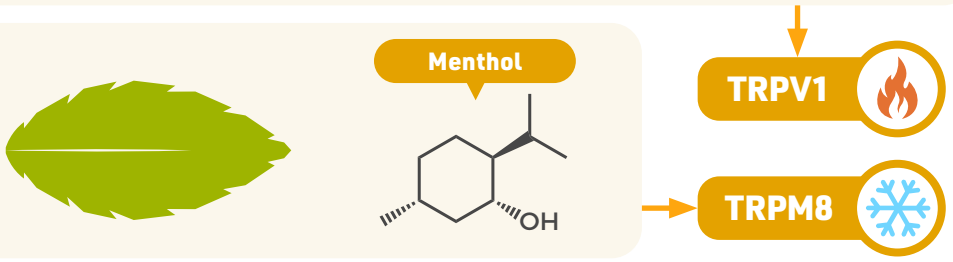
2021 NOBEL PRIZE IN PHYSIOLOGY/MEDICINE

The Nobel Prize in Physiology or Medicine 2021 was awarded jointly to **David Julius** and **Ardem Patapoutian** for their discoveries of several receptors for temperature and touch.

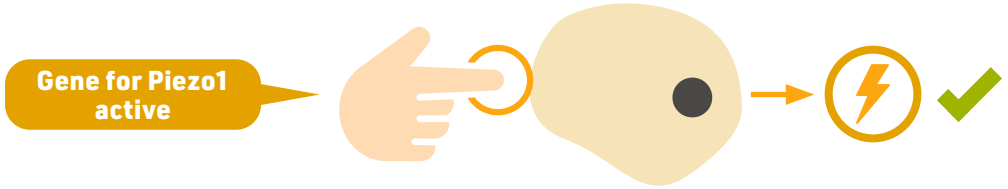


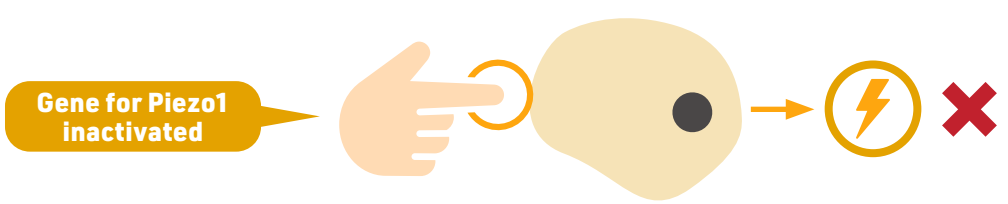
How do our bodies sense changes in temperature, and what lets us know when we're touching something? The winners of this year's prize identified how nerve impulses that pass on this information are triggered by changes in temperature or pressure, allowing our bodies to sense our environment.



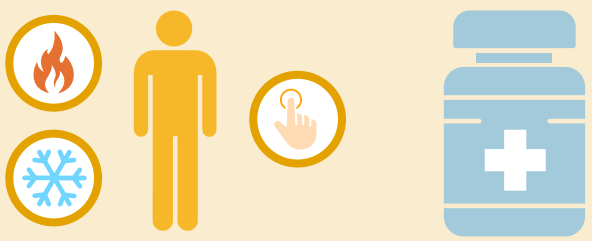


David Julius identified a gene that made cells sensitive to capsaicin, the spicy compound in chilli peppers. This gene codes for the TRPV1 receptor, an ion channel activated by temperatures above 43 °C. Other temperature-sensing ion channels were discovered, including TRPM8 which is activated by cold temperatures and was identified using menthol, the cooling compound found in mint.





Ardem Patapoutian used cells which gave off a measurable electric signal when prodded to identify a gene which, when inactivated, stopped this signal. The gene codes for the Piezo1 receptor, a mechanosensitive ion channel. A similar channel, Piezo2, is essential for the sense of touch. Both receptors also have roles in regulation of blood pressure, respiration, and bladder control.



WHY DOES THIS RESEARCH MATTER?

This research explains some of the ways in which we sense our environment. Understanding how our bodies sense changes in temperature and pressure has also helped with the development of treatment for pain, some cancers, and asthma.

Nobel Prize in Physiology or Medicine Press release: https://www.nobelprize.org/prizes/medicine/2021/press-release/