

## Nobel for deciphering the science of touch

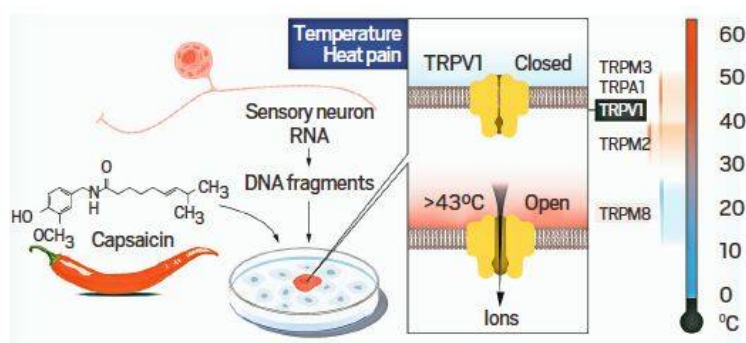
### Why in news?

Julius and Patapoutian have been awarded the **Nobel Prize in Physiology 2021** for their discoveries of receptors for temperature and touch.

### What is their discovery about?

- In the human body, only very specific proteins sense heat and relay this signal to the nervous system which then triggers an appropriate response.
- Scientists knew that such sensors must exist, but were not able to identify them until Julius discovered the first heat receptor in capsaicin, the chemical compound in chilli peppers.
- That first discovery led to identification of several other receptors that can sense coldness, pressure, etc.

### What is the mechanism of the receptors?



The discovery of the receptor TRPV1 paved the way to the unravelling of additional receptors, which together code for temperature sensation.  
[nobelprize.org](http://nobelprize.org)



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■ Tuesday, October 5:  
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■ Wednesday, October 6:  
Chemistry

■ Thursday, Oct 7: Literature  
■ Friday, October 8: Peace  
■ Monday, October 11:  
Economics

- When something hot or cold touches the body, the heat receptors enable the passage of some specific chemicals like calcium ions through the membrane of nerve cells.
- The entry of the chemical inside the cell causes a small change in electrical voltage, which is picked up by the nervous system.

- There is a whole spectrum of receptors that are sensitive to different ranges of temperature.
- Things are similar for sensing coldness.
- These receptors were sensitive not just to external touch, but could detect temperature or pressure changes inside the body as well.

### **What is the significance of this discovery?**

- Decoding the neuroscience of pain can help develop new targets for pain therapy.
- The identification of these receptors opens up the possibility of regulating their functioning.
  - For example, if the receptors that feel pain are suppressed or made less effective, a person can feel less pain.
- There were several other therapeutic implications that might be useful in treatment of diseases like cancer or diabetes.

**Source: The Indian Express**

