Nobel for deciphering the science of touch

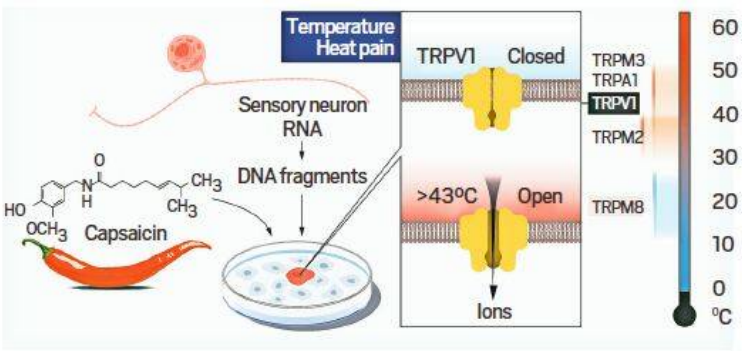
Why in news?

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



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- 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

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