

Neuroscience/ Medicine
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Mechanisms of chronic pain

Speaker:

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Title: Translational aspects

Although being an almost everyday experience, pain is a problematic topic for basic research. Its subjective nature hampers traditional assessment of intensity and moreover, acute and chronic pain have different mechanisms and partially opposing implications: while acute pain protects against injury, chronic pain is a very common debilitating disease causing enormous suffering and economic losses worldwide. The difference between the beneficial acute pain and nasty chronic pain is obvious when you compare the warning sign of heat pain when approaching a flame to “useless” headache.

Experimental approaches to study pain deal with the subjectivity of this sensation by focussing on correlations between the subjective pain ratings and objective physiological responses. On the other hand pain models inducing sensitization are being studied to investigate mechanisms of chronic pain. Sensitization can occur along the entire neuronal pathway of pain including the sensory nerve endings in the tissue, the spinal cord neurons and central pain processing circuits. Recent results of humans being “pain-free” because of a mutation in a certain sodium channel of peripheral “pain neurons” have revived the interest in basic mechanisms of how external stimuli are transformed into sequences of action potentials transmitted to the central nervous system. Experimental approaches to study these mechanisms and their modulation in disease will be shown for animals (rodents and pigs), healthy human volunteers and pain patients indicating major species differences.

International Association for the Study of Pain: http://www.iasp-pain.org/AM/Template.cfm?Section=Pain_Definitions&Template=/CM/HTMLDisplay.cfm&ContentID=1728