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Recent Progress in Sensory Mechanism

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Abstract: Pain serves as a warning of impending injury, triggering appropriate protective responses. Emotional and cognitive processing in the brain is involved in the sensation of pain. As Ca^{2+} waves in keratinocytes are mediated by the release of extracellular molecules such as signaling molecules, this may also affect the activity of surrounding cells such as sensory neurons. Although no junctions have been found between keratinocytes and sensory termini, ultrastructural studies have shown that keratinocytes come into contact with dorsal root ganglion neurons through membrane-membrane apposition. There is also indirect evidence that keratinocytes communicate with sensory neurons via extracellular molecules. Sensory neurons themselves sense various external stimuli, but there may also be skin-derived regulatory mechanisms by which sensory signaling is modulated.
First, we will give a general outline of the subject: 1) Progress in identifying cortical loci that process pain messages is needed. 2) Far greater advances have been made in understanding the molecular mechanisms whereby primary sensory neurons detect painproducing stimuli. 3) Genetic studies have facilitated the identification and functional characterization of molecules. 4) Now, the relationship between sensory and ion channels has become clear.

Key words: Nociceptive receptor, Odontoblast, TRPV1 channel, Purinergic receptor, ATP

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