Opioid Receptor Encyclopedia Article

Opioid Receptor

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Opioid Receptor

Opium has long been a drug of great interest to scientists. Although one of the most effective of all pain killers, it has the serious disadvantage of producing addiction in those who use it for extended periods. Research on the mechanism by which opium works in the central nervous system has the double appeal, therefore, of providing information on the nature of pain and on drug addiction.

In 1973 an important breakthrough in this research occurred. Solomon Snyder and Candace Pert at Johns Hopkins School of Medicine discovered receptors on brain cells to which opium will bind. These receptors have come to be called opioid receptors. The term opioid is used for any type of chemical that behaves in a manner similar to that of opium.

Snyder and Pert next looked for places in the central nervous system where opioid receptors are most common. They found two such locations, one in the spinal column, where pain is first detected, and a second in the medial thalamus of the brain, where chronic pain is often concentrated. Solomon and Pert hypothesized that opium locks into opioid receptors on a cell and slows the rate at which that cell can transmit a "pain" message. Blocking the opioid receptor and slowing cell function may also be responsible for the sense of euphoria that accompanies opium use. In later research, the natural function of opioid receptors was discovered. John Hughes and Hans Kosterlitz at the University of Aberdeen found chemicals that occur naturally in the human body and that also bind to opioid receptors. These chemicals, called enkephalins, are an important part of the body's natural pain-fighting mechanism.