

HUMAN ANATOMY AND PHYSIOLOGY 1(BP101T)

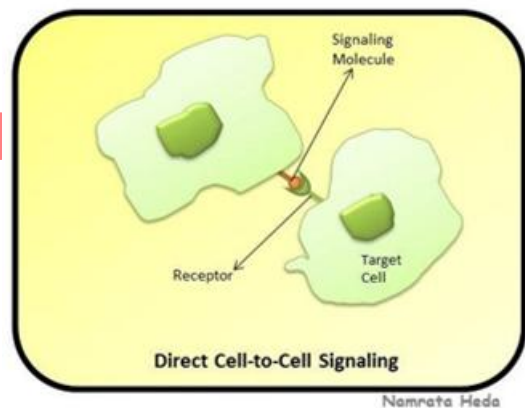
UNIT: 1 CELLULAR LEVEL OF ORGANIZATION

CLASS-6

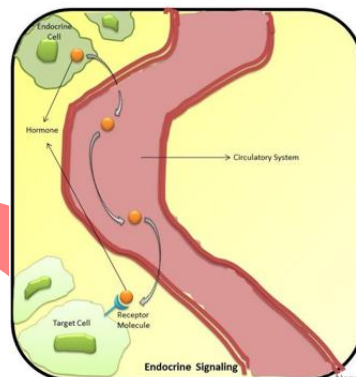
TOPIC: Forms of intracellular signaling: a) Contact-dependent b) Paracrine c) Synaptic d) Endocrine

A) CONTACT-DEPENDENT:

Cell signaling can take place by direct cell-to-cell interaction (as can be seen in the adjacent figure) where, on the surface of one cell, is the signaling molecule that binds directly to receptor, which is present on the surface of the other cell. The cell signaling/ cell-cell communication can also take place by the action of various signaling molecules. As already mentioned above, various cell receptors are present on the target cells which bind to signaling molecules.



B) PARACRINE: 'Para' means 'nearby' and 'crine' means 'to secrete'. Thus, 'paracrine' word means 'secretion nearby'. Thus, in this type of signaling, the molecules (signaling molecule) released by one cell acts on or bind to the receptor on the nearby neighbouring cell. A very common example of paracrine signaling is the neurotransmitters. These are present at the synapse or junction of neuron cells and help in transmitting the signals. So, neurotransmitters are released by one neuron cell and they act on nearby neuron cell to transmit the signal.



C) SYNAPTIC: Synaptic signalling exclusively occurs between cells with synapse. An example is the interaction between a neuron and the muscle that is controlled by neural activity. Synaptic signalling is involved in the communication between neurons. It is triggered by signals from the brain such as touch or eyes sensors.

D) ENDOCRINE: The word "endocrine" originates from two words, 'endo' and 'crine'. The former word means 'within' and the suffix 'crine' means 'to secrete' or 'separate'. Thus, the word endocrine means 'secrete from within'. In this type of signaling, the signaling molecules are secreted from within the endocrine glands; they travel through the circulation system and act on/ bind to receptor molecules on the target cell (as can be seen in the above figure). The signaling molecules in this type of signaling are 'hormones'. An example of endocrine signaling: The hormone, insulin, is secreted by pancreas which then travel through the circulatory system which has an effect of stimulating muscle cell or adipose cells.