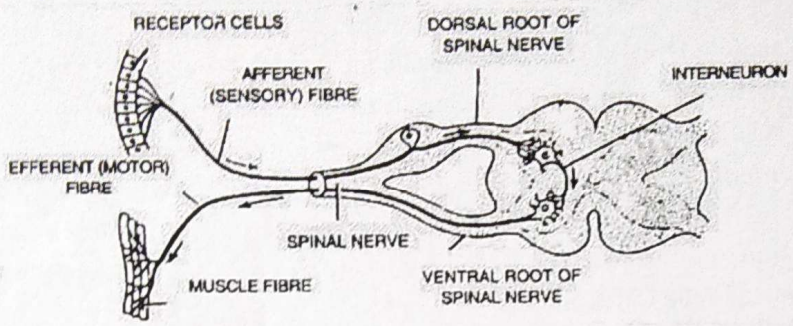
REFLEX ACTION AND TYPES

Reflex action is a rapid, automatic action carried out without the intervention of the will of the animal. It is independent of the will of the animal.

Marshall Hall first observed such action in the year 1833.

During reflex action the impulse travels through a path known as reflex arc. A simple reflex arc (monosynaptic) involves a sensory or afferent neuron, an interneuron present within the spinal cord and a motor or efferent neuron. The afferent is connected to the receptors (such as skin) and the efferent is connected to the effectors (muscles or glands).



The stimulus detected by the receptors passes into the sensory or afferent neuron. These impulses enter the spinal cord through the dorsal root and initiate impulse in interneuron or association neuron. From the spinal cord the impulse is carried through the ventral root and travel along the afferent or motor nerve fibres to reach the effect or organ.

Some Important Reflex Actions:

(i) Narrowing of the pupil of eye on seeing bright light

(ii) Withdrawal of limbs when it touches hot object

(iii) Quick closing of eye lids when a flying object suddenly approaches the eye

(iv) Coughing, sneezing, yawning

(v) Shivering with cold

(vi) Opening of the mouth on hearing a sudden loud noise.

Monosynaptic Reflex Arc:

It is a simple reflex arc involving one sensory and one motor nerve fibre. It is generally not found in vertebrates.

Polysynaptic Reflex Arc:

Reflex arc involving more than one sensory and one motor neuron Types of Reflexes:

Reflex Arc

The structural and functional unit in the simple reflex is termed as reflex arc. In its basic form reflex arc is regarded as simple nervous pathway connecting a receptor and an effector. Reflex arc has the following parts:

i)Receptor : Receptor represented by single sensory cell or a group of cells which receives stimuli.

ii)Sensory or afferent neuron : Sensory connects the receptor to the spinal cord. The cell body of sensory is stimulated in the dorsal root ganglion of the spinal nerve. Sensory conveys impulses from the receptor to the spinal cord.

iii)Interneuron or association neuron : Interneuron is present in the spinal cord. Interneuron connects afferent and efferent neurons and passes impulses from afferent to efferent neuron. Generally, there is only one association neuron in the reflex but sometimes two or more are involved in one reflex arc.

iv)Motor neuron or efferent neuron : Motor neuron is located in the ventral root of spinal cord. Motor neuron transmits impulses to the effecteo organ.

v)Effector organ : It responds to the impulses received. E.g., a muscle or a gland.