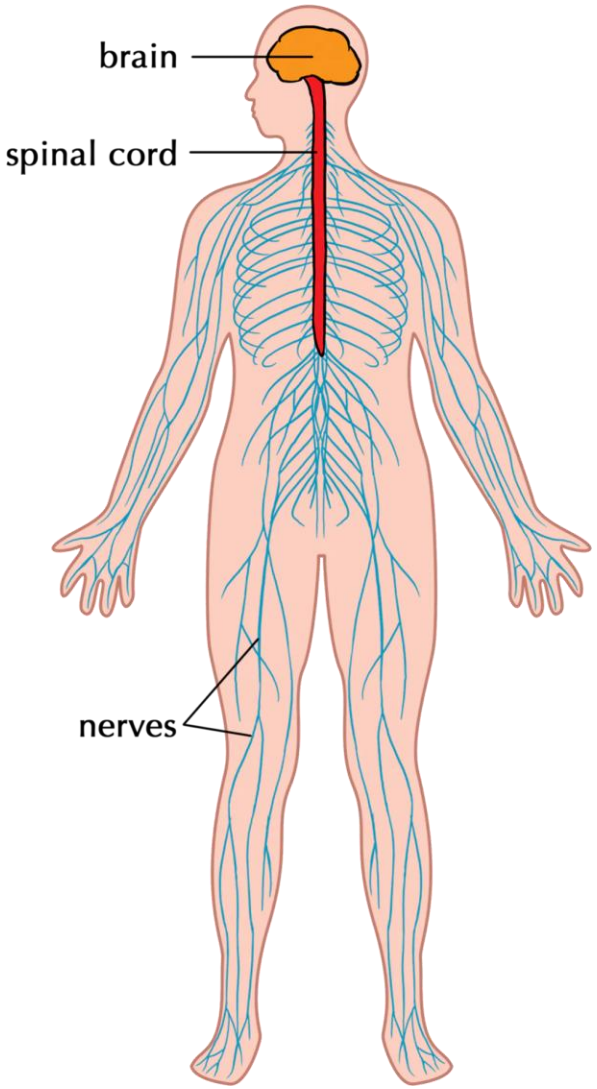
WHAT IS NERVOUS SYSTEM?

- Part of the human regulatory system
- The system of organs ensuring the management of the organism
- It ensures the reception, transmission and processing of nerve impulses
- Nerve regulation system - regulation through nerves
- Hormonal regulatory system - regulation by hormones
- Pituitary gland – is located at the base of the midbrain and connects nervous and hormonal control

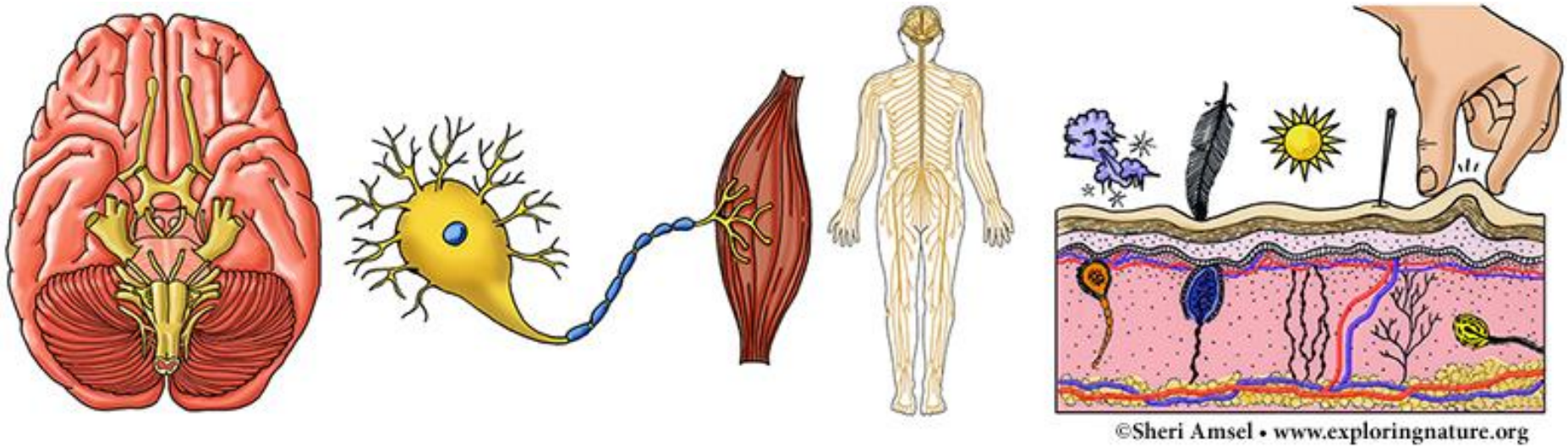
DIVISION OF NERVOUS SYSTEM

- Peripheral nervous system - a network of nerves that transmit information to the central nervous system
- Central nervous system - consisting of the brain and spinal cord, which process information received from all parts of the body and send signals to other parts of the body



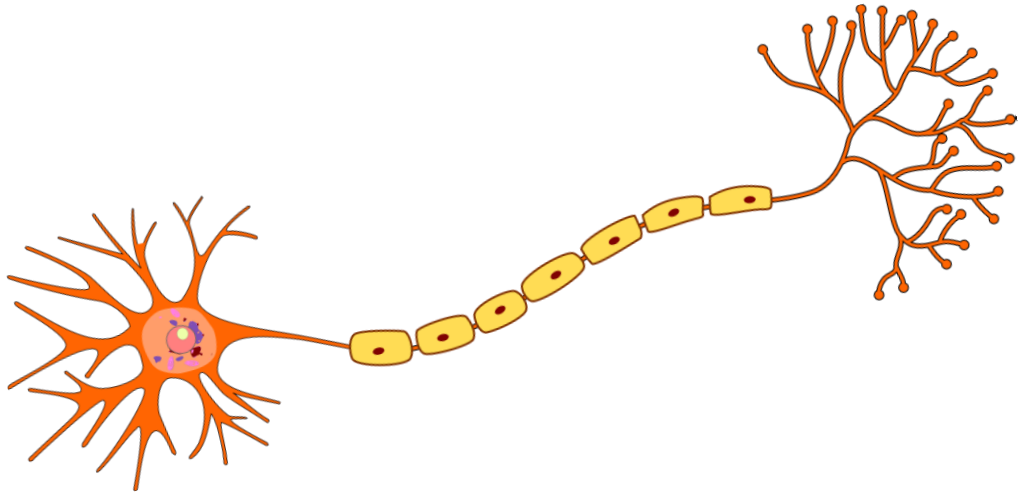
FUNCTIONS OF NERVOUS SYSTEM

- Management and coordination of individual functions of the organism
- Contact with the environment
- Receiving, transmitting and processing nerve impulses



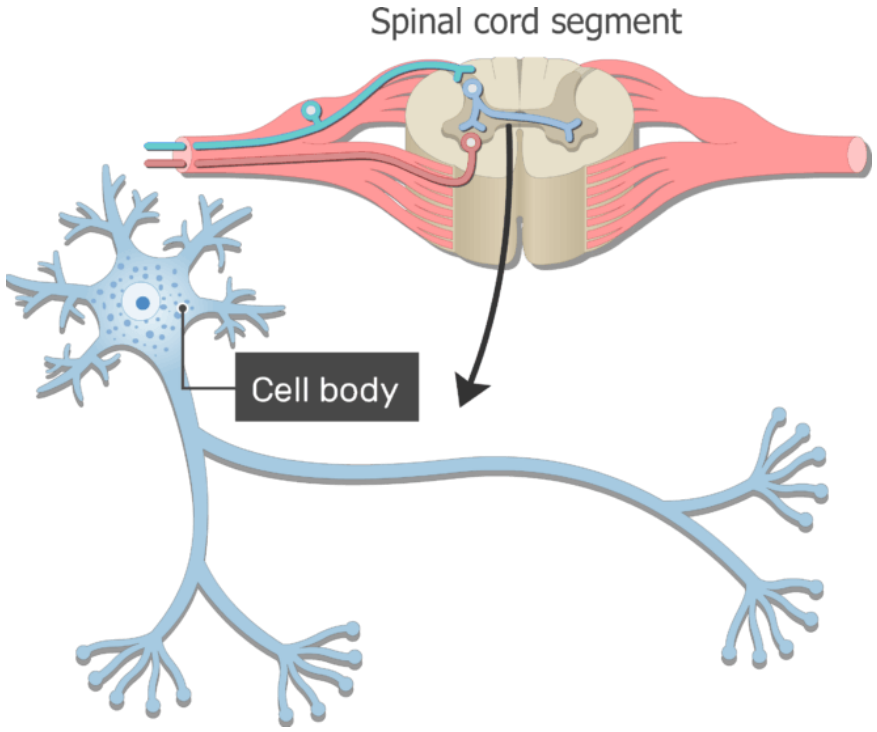
NERVE CELLS – NEURONS

- Basic structural and functional unit of the nervous system
- The basic function is to respond to various stimuli - irritability
- It receives, conducts, transmits signals in the form of electrical pulses

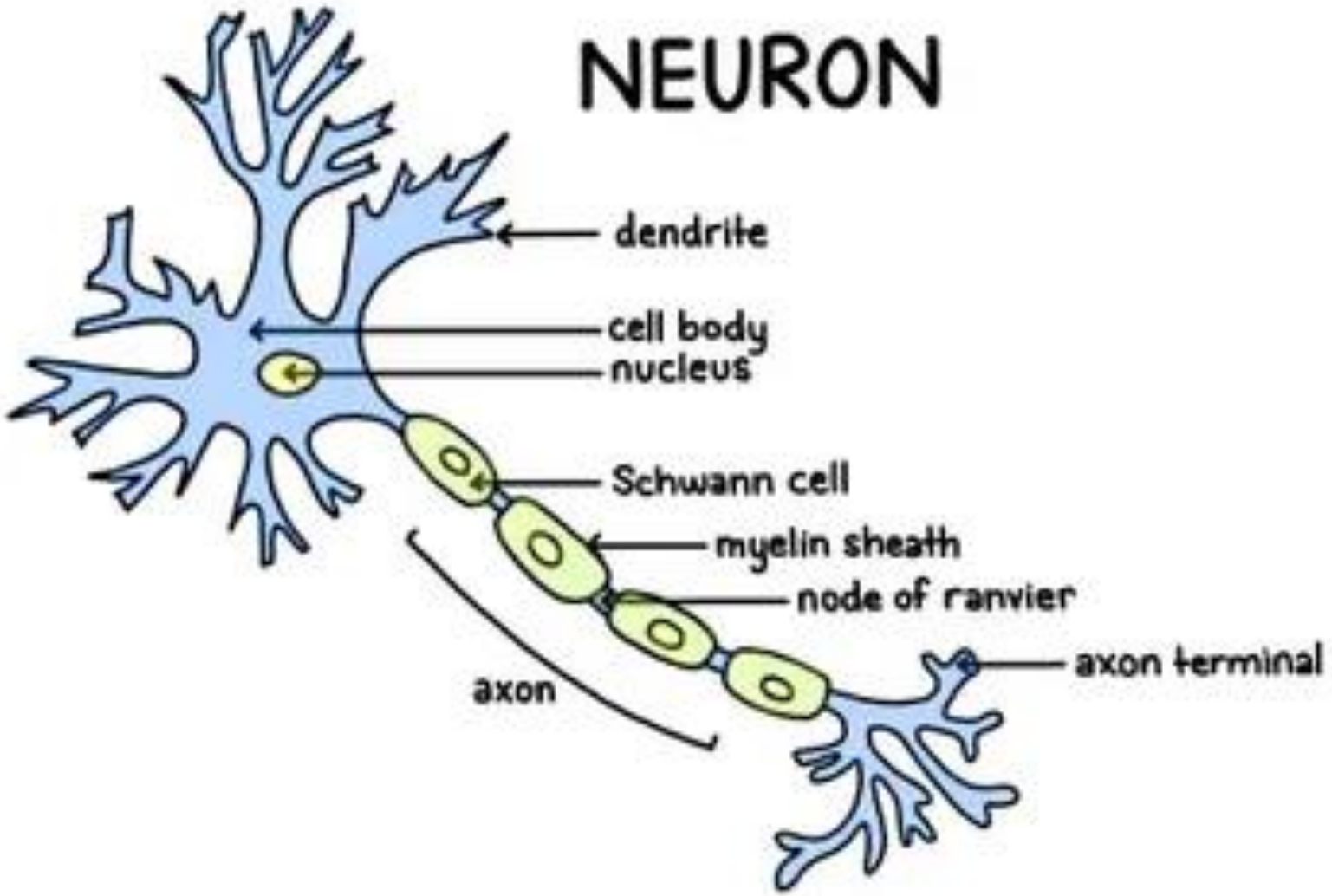


NERVE CELLS – NEURONS

- Structure: body - core, dendrites, (short protrusions), axon (long protrusion), Myelin sheath, Schwann cells, Ranvier incisions

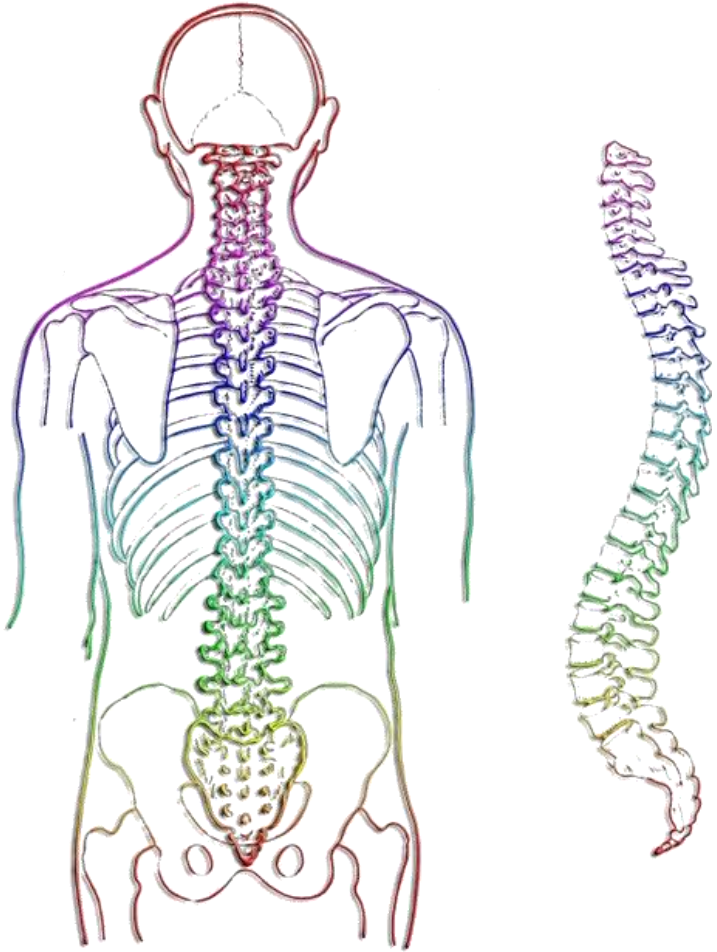


ALIVE


NEURON
dendrite
cell body
nucleus
Schwann cell
myelin sheath
node of ranvier
axon terminal
axon

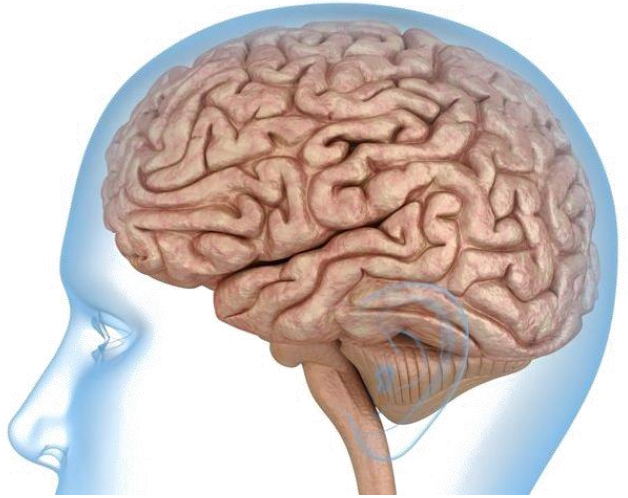
SPINAL CORD

- A column of nerve tissue that runs from the base of the skull down the center of the back
- Provides a nerve connection between the brain and the rest of the body
- It consists of white matter - the surface of the spinal cord, and gray matter
- Thanks to the spinal cord, the brain actively responds to changes in the external environment
- The spinal cord is the center of movement reflexes



BRAIN

- It is located in the cranial cavity that protects it
- The central organ of the human nervous system
- 3 parts - back, middle, forebrain
- The largest part - the terminal brain
- Lower sections - brainstem
- The elongated spinal cord is a continuous continuation of the spinal cord

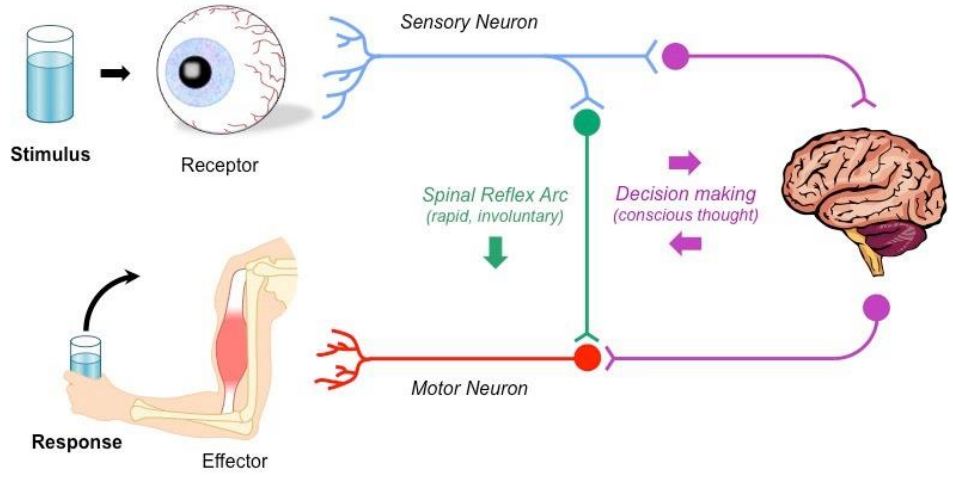


STIR TRANSMISSION

1. neurons - fibrous protrusions - stimulus - irritation from the environment

2. received stimulus - electrical impulse (nerve excitation)

3. The nerve impulse at the end of the fibrous procession is transmitted to the procession of another neuron



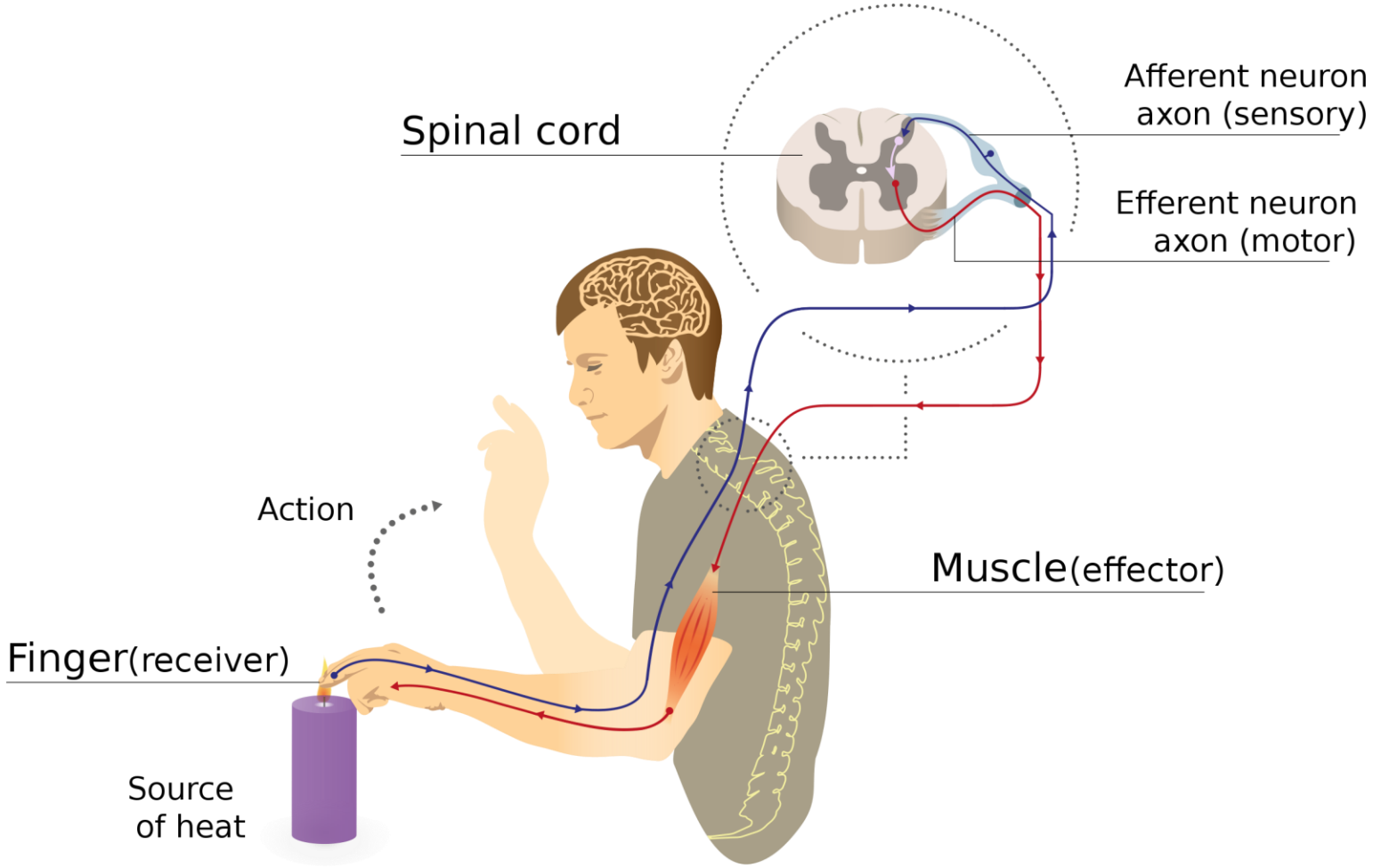
REFLEX

- Reflex - the body's response to a stimulus
- Unconditional (innate reflexes) – reflexes, which are inborn (present since birth) and don’t depend upon previous experience or learning
- Conditional (acquired reflexes) – reflexes which develop after birth and their appearance depends upon previous experience

Conditioned response (Salivation)

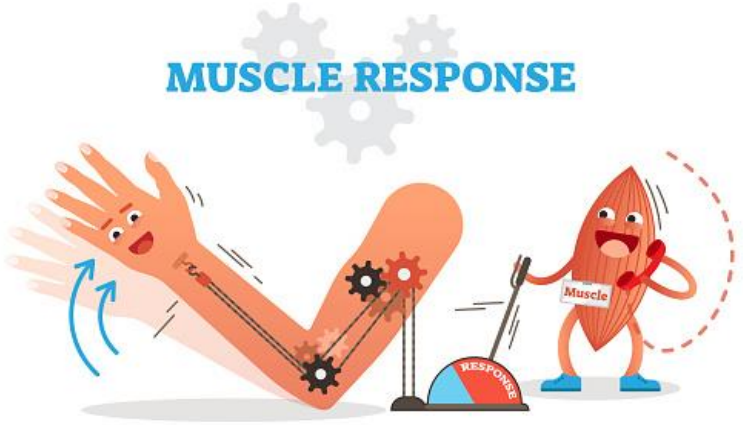
Conditioned stimulus (Bell ringing)

REFLEX


Spinal cord
Afferent neuron
axon (sensory)
Efferent neuron
axon (motor)
Action
Muscle(effector)
Finger(receiver)
Source
of heat

REFLEX ARC

- It represents the path that impulses take during the reflex – transmission of nerve impulses between nerve cells
- Simple reflective arc - sensitive and motor part
- 1. sensory cell - stimulus - centripetal nerve fiber - central NS - spinal cord
- 2. central NS - excitement - centrifugal nerve fiber - executive organ - e.g. muscle
- 3. executive organ - reflex - reflex arch



PICTURES – USED SOURCES

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