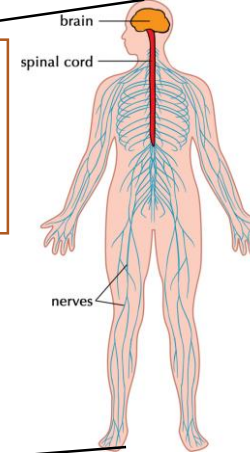


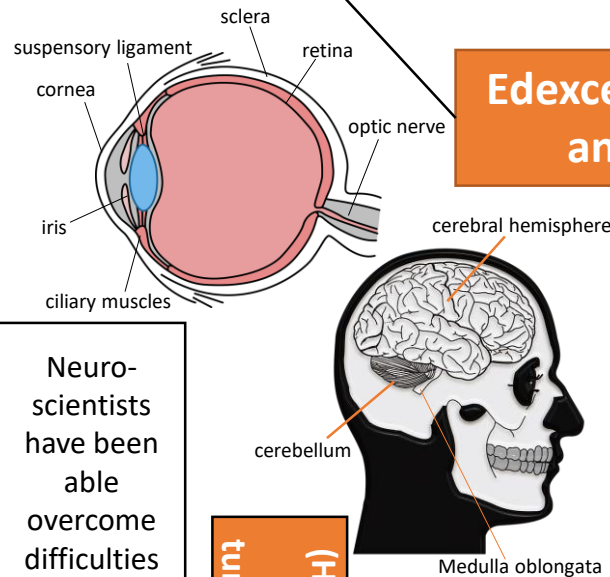
# Sense organ containing receptors sensitive to light intensity and colour

## The human nervous system

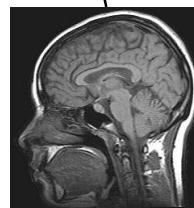


## Edexcel GCSE Biology Cells and Control Part 2

### The Eye



Neuro-scientists have been able to overcome difficulties of accessing brain tissue in the skull using CT and PET scanning



(HT) The complexity and delicacy of the brain makes treating brain tumours/spinal injuries very difficult

The brain controls complex behaviour. It is made of billions of interconnected neurones.

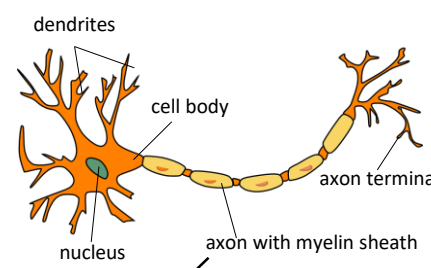
### The Brain

(HT) Adult stem cells cannot be differentiated to form neurones in the spinal cord and brain to repair damage/disease

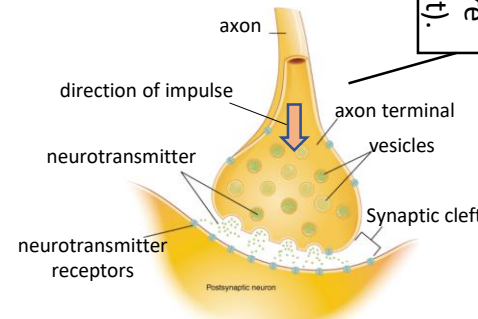
Structure and functions	
<b>Sensory receptor</b>	Detect stimuli e.g. Pressure cells in skin
<b>Sensory neurone</b>	Long axon carries impulse from receptor to spinal cord.
<b>Synapse</b>	Gap where neurones meet. Chemical message using neurotransmitter.
<b>Relay neurone in CNS</b>	Allows impulses to travel between sensory and motor neurones in the spinal cord.
<b>Motor neurone</b>	Long axon carries impulse from receptor to effector.
<b>Effector</b>	Muscle or gland that carries out response.

Neurone structure	
<b>Axon</b>	Carries electrical impulse to axon terminals.
<b>Dendron</b>	Carries electrical impulse from receptor cells in sensory neurones.
<b>Myelin sheath</b>	Insulates the electrical impulse in the neurone.

Synapse (gap where two neurones meet).



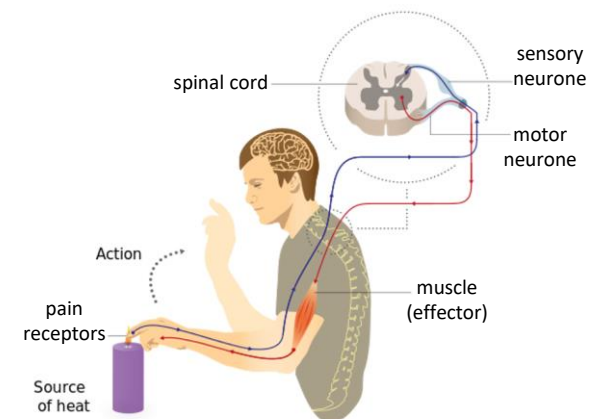
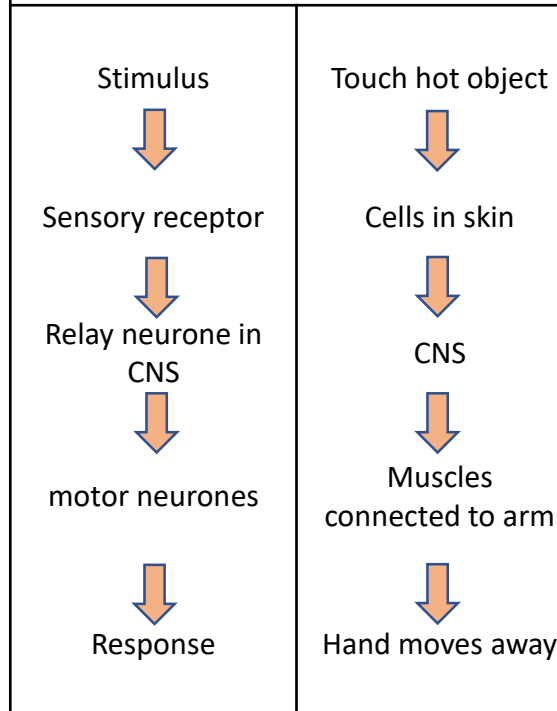
Typical motor neurone



Information from receptors passes along cells (neurones) as electrical impulses to the central nervous system (CNS)

The CNS is the brain and the spinal cord.

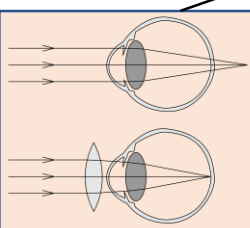
Reflex actions are automatic and rapid; they do not involve the conscious part of the brain and can protect humans from harm.



### Defects of the eye

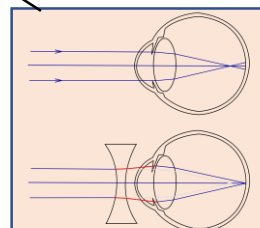
**Hyperopia (long sightedness)**

Lens can not be made thick enough, light focuses after the retina. Treated using a convex lens so the light is focused on the retina.



**Myopia (short sightedness)**

Lens too thick, light focuses, before the retina. Treated using a concave lens so light is focused on the retina.



Cataracts are caused by protein build up in the lens blocking light entering the eye. They can be removed with surgery and an artificial lens inserted.

Colour blindness is when cones in the retina do not work properly and some colours cannot be detected.

The brain has different regions that carry out different functions.	
<b>Cerebral hemispheres</b>	Largest part of the human brain. Higher thinking skills e.g. speech, decision making.
<b>Cerebellum</b>	Balance and voluntary muscle function e.g. walking, lifting.
<b>Medulla oblongata</b>	Involuntary (automatic) body functions e.g. breathing, heart rate.