

Year 10

Biology booklet

Topic 2 - Bioenergetics

Name: \_\_\_\_\_

# Bioenergetics (Respiration and Photosynthesis)

Give a definition for each of these key words:

Respiration	
Aerobic respiration	
Anaerobic respiration	
ATP	
Mitochondria	
Oxygen debt	
Lactic acid	
Muscle fatigue	
Metabolism	
Urea	
Photosynthesis	
Chlorophyll	
Limiting factor	
Glucose	

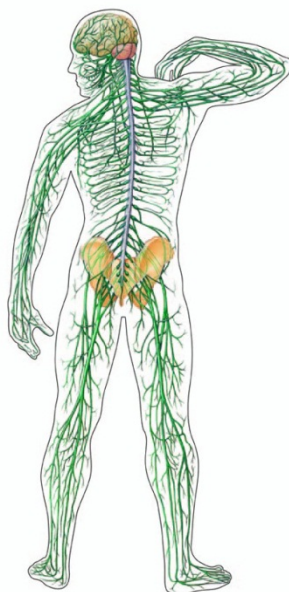
The word equation for aerobic respiration is:

→

The word equation for photosynthesis is:

→

# The Nervous System



The Central Nervous System (CNS) coordinates a \_\_\_\_\_.

It is where all the information from the \_\_\_\_\_ organs is sent, and where \_\_\_\_\_ and actions are coordinated.

The CNS consists of the \_\_\_\_\_ and the \_\_\_\_\_.

The \_\_\_\_\_ transmit information as \_\_\_\_\_ impulses to the CNS. 'Instructions' are then sent from the CNS to the \_\_\_\_\_, for example, muscles and glands.

## **Word Bank:**

neurones, sense, response, brain, electrical, spinal cord, receptors, reflexes

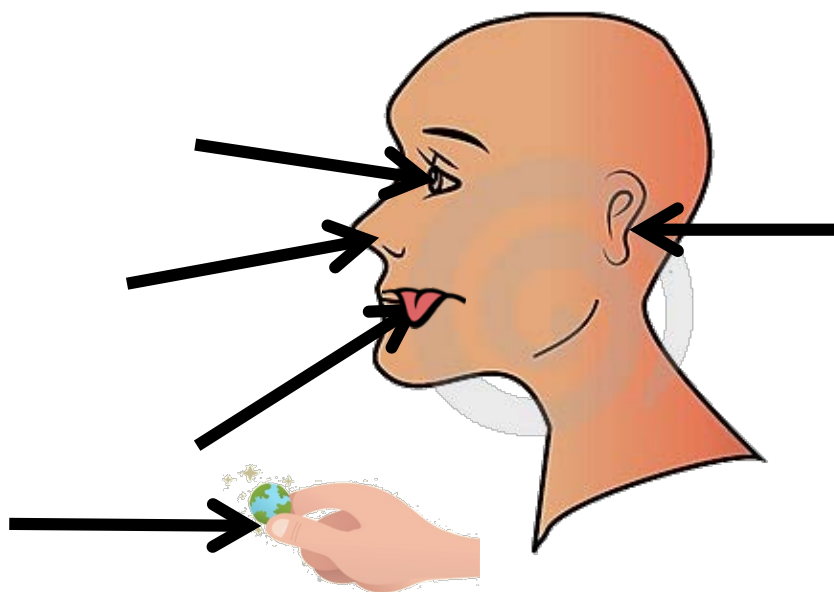
**A stimulus** is...

Some examples are:

Sense organs contain **receptors**. Receptors are...

They change...

**Sense Organs:** Identify the sense organ and the type of stimulus they detect



Match the key terms to the meanings:

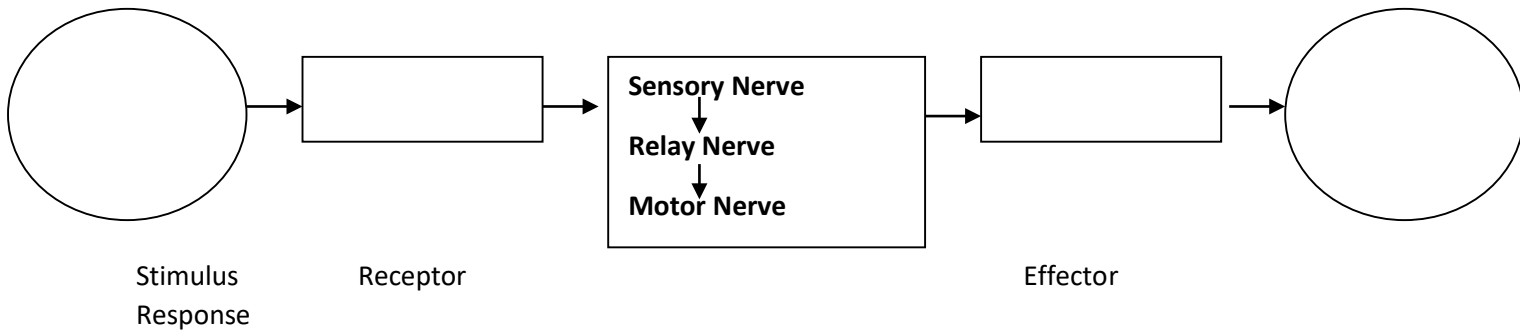
Neurone
Synapse
Receptor
Sensory neurone
Motor neurone
Reflex
Relay neurone
Stimulus
Effectors
Central nervous system
Nerve
Nerve impulse

An automatic response to a stimulus that does not involve conscious thought.
Connects a motor and a sensory neurone in the central nervous system and is involved in a reflex arc.
Carries the nerve impulse from the central nervous system to an effector.
Electrical message that passes along a neurone.
Changes in the environment.
A specialised nerve cell.
A junction between 2 neurones.
A bundle of neurones.
The brain and the spinal cord.
Carry out the response and are either muscles or glands.
This carries the nerve impulse from the receptor to the central nervous system.
Specialised cells that detect stimuli.

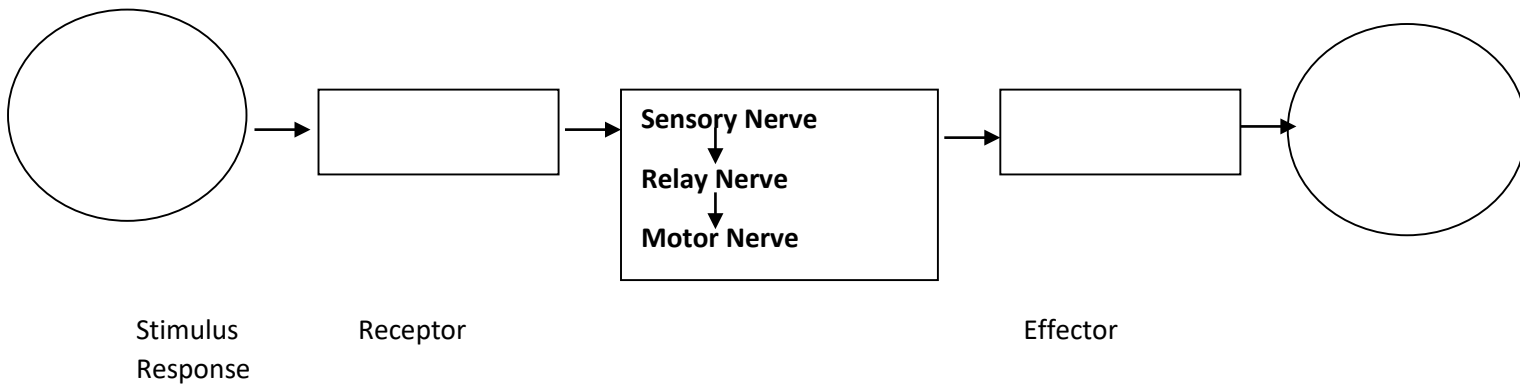
## A reflex arc

Use the sentences to complete each simple reflex arc diagram. To complete the diagram, identify the stimulus, receptor and effector in each story.

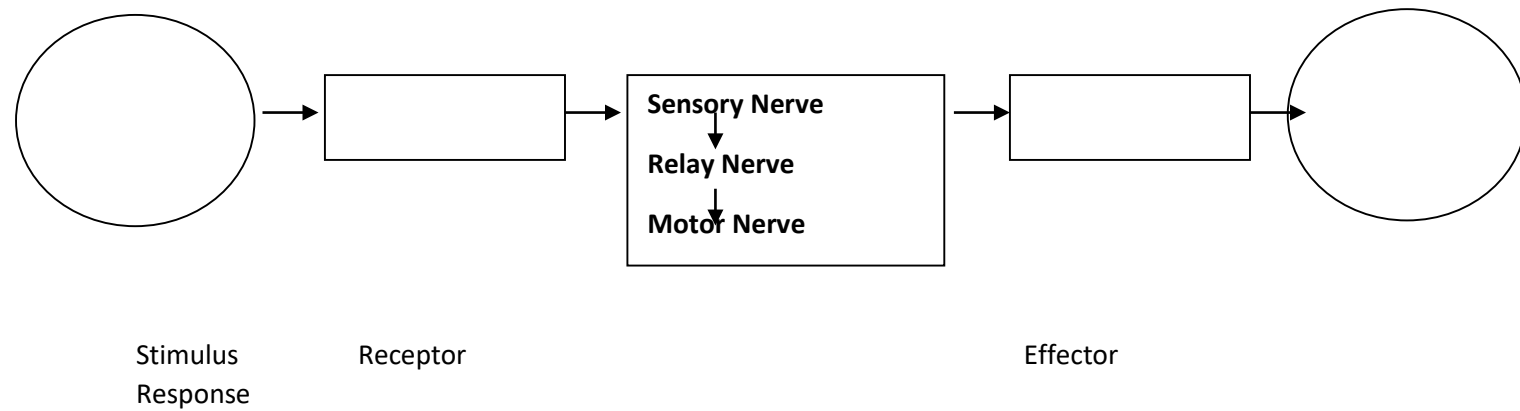
1. John was on his way home from school when he hears to pitbulls barking. Before he has a chance to look at them, he starts to run away.



2. Kate goes on a hike. She is bitten by a mosquito but quickly kills it.



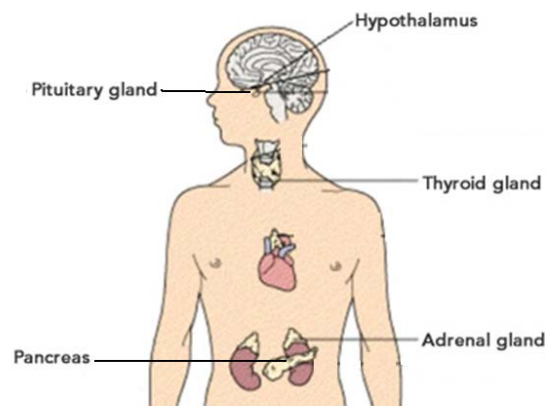
3. You are cooking but you accidentally pick up the pot while it is hot.



## The Endocrine System – Questions

The word 'endocrine' means 'internal secretion' and the organs of this system are therefore glands of internal secretion. Although the glands are found all over the body they all influence one another.

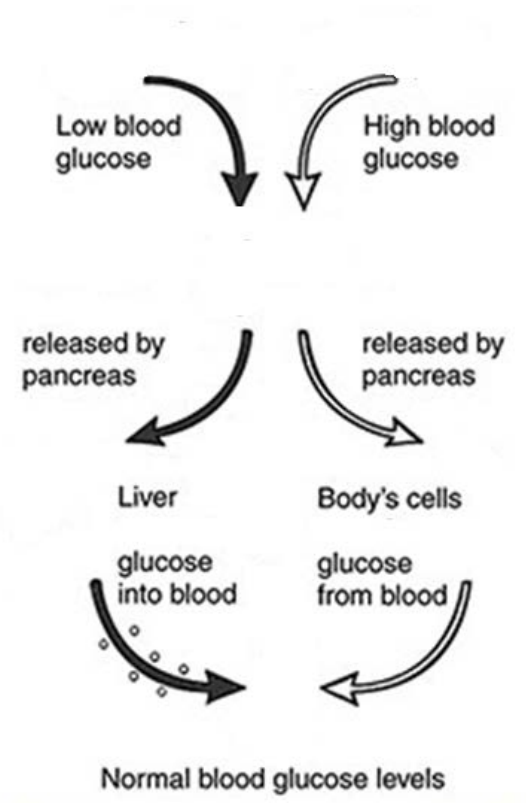
The endocrine gland that controls the functions of all the other endocrine glands in this system, the pituitary or master gland, is found in the brain.



Function	Gland
1. Stimulates development of the ovarian follicle.	
2. Controls blood glucose levels.	
3. Influences the rate of growth and development of young animals.	
4. Stimulates the growth of long bones.	
5. Stimulates absorption of water from the kidney tubule.	
6. 'Prepares the body for fight or flight'	
7. Affect glucose, protein and fat metabolism.	
8. Prepares the body for emergency situations.	
9. Produces a hormone called Insulin	
10. Controls the pituitary gland	

<b>Hormone</b>	<b>Produced by:</b>	<b>Use in the body:</b>
Insulin		
Progesterone		
Oestrogen		
Growth hormone		
Adrenaline		
Antidiuretic hormone		
Testosterone		
Oxytocin		
Thyroxine		

	<b>Nervous System</b>	<b>Endocrine System</b>
How do signals travel?		
What is the signal?		
Message travels Fast or Slow?		
Instant or Time-consuming?		
Short lived response or Long lived response?		
Focus on one cell or Many (eg organs, tissues)?		
Localised or Widespread?		



After a meal the level of glucose in our bodies [increases/decreases]?

After exercise the levels of glucose in our bodies [increases/decreases]?

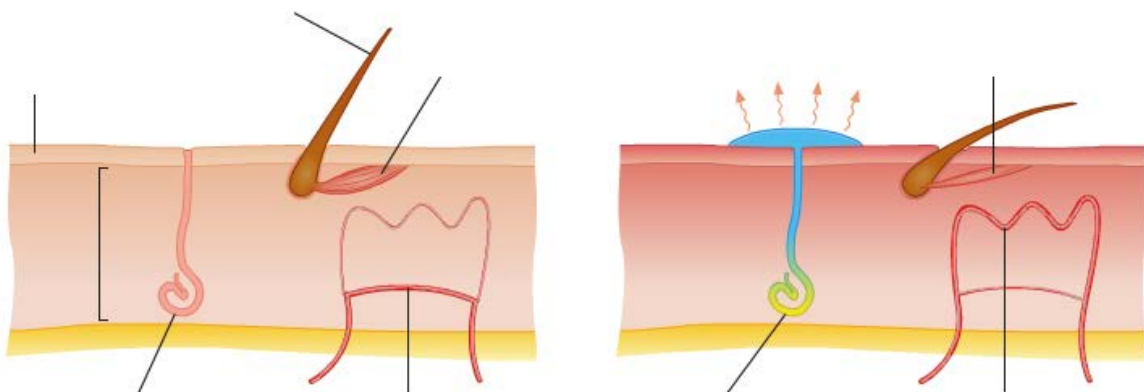
This happens because...

What is "thermoregulation"? Write a brief definition:

What is "body temperature"?

Why does this temperature need to be maintained?

Label the diagram of the skin and explain the meaning of the terms vasodilation and vasoconstriction





What changes occur when you are too hot?

What changes occurs when you are too cold?

Why is thermoregulation described as a negative feedback loop?