

# OCR (A) Biology A-level

## 5.1.1 - Communication and homeostasis

### Flashcards

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# Why do multicellular organisms need communication systems?



# Why do multicellular organisms need communication systems?

- To respond when their internal & external environment changes.
- To coordinate organ function.



# What is cell signalling?



# What is cell signalling?

Communication between cells: electrical signals carried by neurons or chemical signals as hormones.

- Long-distance **endocrine** signalling.
- **Paracrine** signalling between adjacent cells occurs directly or aided by extracellular fluid.
- In **autocrine** signalling, cell releases signals to stimulate its own receptors & triggers a response within itself.



# What is homeostasis?



# What is homeostasis?

Internal environment is maintained within set limits around an optimum.



Define negative and positive feedback.





Define negative and positive feedback.

**Negative feedback:** self-regulatory mechanisms return internal environment to optimum when there is a fluctuation.

**Positive feedback:** a fluctuation triggers changes that results in an even greater deviation from the normal level.



# What are receptors and effectors?



# What are receptors and effectors?

**Receptors:** specialised cells located in sense organs that detect a specific stimulus.

**Effectors:** usually muscles or glands which enable a physical response to a stimulus.



# What is an ectotherm?



## What is an ectotherm?

Organism that cannot increase its respiration rate to increase the internal production of heat.

Relies on external sources to regulate its body temperature. Responds to temperature changes behaviourally e.g. may orient body to minimise/ maximise sun exposure.



# What is an endotherm?



## What is an endotherm?

Organism that can regulate its body temperature independently of external sources. Thermoreceptors send signals to the hypothalamus, which triggers a physiological or behavioural response.



Outline behavioural methods  
endotherms use to regulate their body  
temperature.





Outline behavioural methods endotherms use to regulate their body temperature.

- basking in the sun
- pressing against warm surfaces
- digging burrows
- hibernation/ aestivation
- panting (heat lost as water evaporates from mouth)



How does the autonomic nervous system enable endotherms to thermoregulate?



## How does the autonomic nervous system enable endotherms to thermoregulate?

Negative feedback. Peripheral thermoreceptors detect changes in skin temperature. Thermoreceptors in hypothalamus detect changes in blood temperature.

Hypothalamus sends impulses to effectors in skin (vasodilation/ constriction, piloerection, sweating) & muscles (shivering).



Explain the role of the skin in thermoregulation.



# Explain the role of the skin in thermoregulation.

Vasodilation/ constriction of arterioles supplying skin capillaries controls heat loss to skin surface.

Hair erector muscles contract & follicles protrude to trap air for insulation.

Evaporation of sweat cools skin surface.

