

# OCR (A) Biology GCSE

## B3.3 - Maintaining internal environments

### Flashcards



# Define homeostasis



# Define homeostasis

Maintaining a constant internal environment despite external change



State 3 conditions which need to be controlled within the body



State 3 conditions which need to be controlled within the body

- Temperature
- Water levels
- Blood glucose concentration



# Why does the temperature need to be controlled?



Why does the temperature need to be controlled?

To provide a suitable environment for enzymes so that they can work fastest at their optimum temperature



Give 2 processes involving the skin that cool the body down



Give 2 processes involving the skin that cool the body down

Sweating - Cools the body by evaporation

Vasodilation - Allows blood to flow closer to the surface of the skin where it can cool



# Describe the process of vasodilation



## Describe the process of vasodilation

- The body detects a rise in temperature
- Blood vessels supplying the capillaries at the skin surface dilate (the muscles in the vessels relax)
- More blood flows closer to the skin where it can cool



Give 3 processes that work to keep the  
body warm



Give 3 processes that work to keep the body warm

- Vasoconstriction
- Shivering
- Erection of hairs on the skin



# Describe the process of vasoconstriction



## Describe the process of vasoconstriction

- The body detects a drop in temperature
- Blood vessels supplying the capillaries at the skin surface constrict (the muscles in the vessels contract)
- Less blood flows closer to the skin surface so less heat is lost to the surroundings



# State 2 effects caused by insulin secretion



## State 2 effects caused by insulin secretion

- More glucose is taken up by cells
- Glucose is converted to glycogen for storage

(Both of these cause a decrease in blood glucose levels)



What does the secretion of glucagon  
cause? (Higher)



What does the secretion of glucagon cause?

(Higher)

Glucagon secretions cause glycogen to be broken down into glucose to raise the blood glucose concentration



What is the difference between type 1  
and type 2 diabetes?



What is the difference between type 1 and type 2 diabetes?

Type 1 diabetes is where the body doesn't produce enough insulin

Type 2 diabetes is where the body no longer responds to insulin



# How can type 1 diabetes be treated?



# How can type 1 diabetes be treated?

## Insulin injections



# How can type 2 diabetes be treated?



# How can type 2 diabetes be treated?

Type 2 diabetes can be treated by eating healthily and exercising regularly



What happens if an animal cell is placed in a solution of lower water potential?



What happens if an animal cell is placed in a solution of lower water potential?

The cell will shrink (crenate)



What happens if an animal cell is placed in a solution of higher water potential?



What happens if an animal cell is placed in a solution of higher water potential?

Water will move into the cell and it will burst (lyse)



What happens if an animal cell is placed in a solution of equal water potential?



What happens if an animal cell is placed in a solution of equal water potential?

There will be no net movement of water in or out of the cell



# What is the function of the kidneys?



## What is the function of the kidneys?

- To regulate the volume and concentration of urine
- To remove waste and regulate body water content



Describe the general structure of a kidney



## Describe the general structure of a kidney

- Contains a cortex and medulla
- Renal artery carries blood to the kidney
- Renal vein carries blood away from the kidney
- Each kidney contains many nephrons
- Ureter carries fluid from the kidneys to the bladder



# What does ADHD do? (Higher)



## What does ADH do? (Higher)

- When ADH is secreted into the bloodstream it increases the permeability of the kidney tubules
- This increases the reabsorption of water



Describe the negative feedback loop  
when dehydration is detected (**Higher**)



Describe the negative feedback loop when dehydration is detected (**Higher**)

- Thirst signals activated
- Less ADH released (water retained by kidneys)



Describe the negative feedback loop  
when overhydration is detected (**Higher**)



Describe the negative feedback loop when overhydration is detected (**Higher**)

- More ADH is released
- Dilute urine is produced
- Salts are retained

