

YR10

IGCSE Biology

Homeostasis

Name: _____

Homeostasis

Body cells work best if they have the correct conditions e.g.

1. _____
2. _____
3. _____

Write the definition of Homeostasis in the box below:

1. What is homoeothermic? Endothermic?

2. What would your body temperature be in the Sahara desert? _____

3. What would your body temperature be in the Arctic? _____

4. Complete these diagrams:



Volume = _____
Surface area = _____
Volume : Surface area
ratio = _____

For every 1 unit of
heat _____



Volume = _____
Surface area = _____
Volume : Surface area
ratio = _____

For every 1 unit of
heat _____

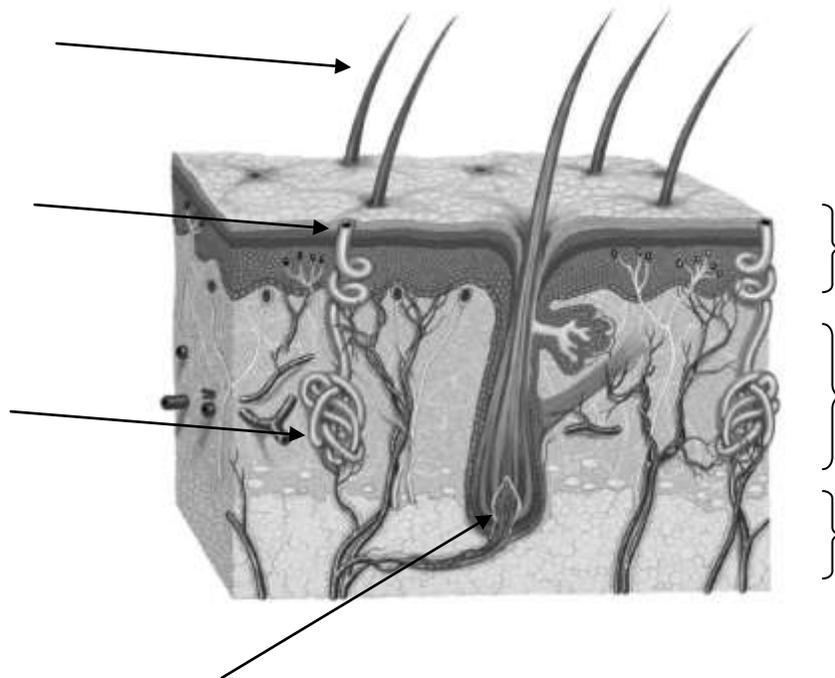
5. The _____ the volume : surface area ratio is, _____

Ways to cool the body down

What controls body temperature? _____

Explain how this happens?

Label the diagram of the skin



What is the function of the human skin?

There are two ways to cool the body down:

1. _____
2. _____

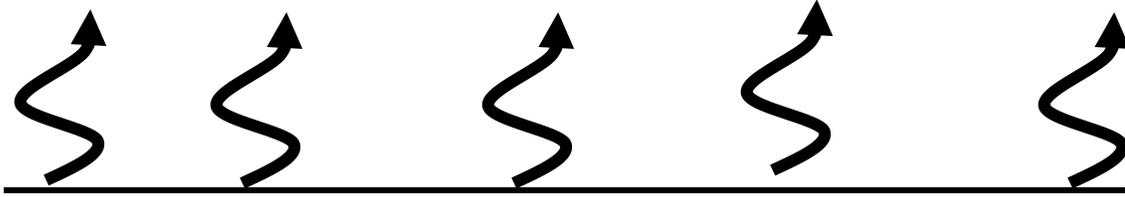
Sweating

- When your body is hot, _____ are stimulated to release sweat.
- The _____ sweat turns into a _____ (it _____)
- To do this, it needs _____.
- It gets that heat from your _____.
- As your skin loses heat, it _____.

Vasodilation

- Your _____ carries most of the heat energy around your body.
- There are _____ underneath your skin that can be filled with _____ if you get too hot.
- This brings the blood _____ of the skin so more heat can be lost.

Draw in the dilated blood vessels:



Ways to warm the body up

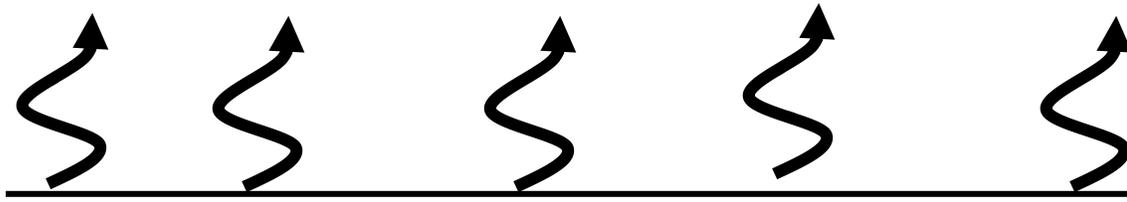
There are two ways to warm the body up:

1. _____
2. _____

Vasoconstriction

- This is the opposite of _____
- The _____ underneath your skin get _____ (shut off).
- This _____
_____ so less heat can be lost.

Draw in the constricted blood vessels:



Piloerection

- This is when the _____ on your _____ “stand up”.
- The hairs _____ next to the skin which is then _____.
- The air becomes an _____.

Draw the hairs as they would look in cold weather. Add the layer of air.



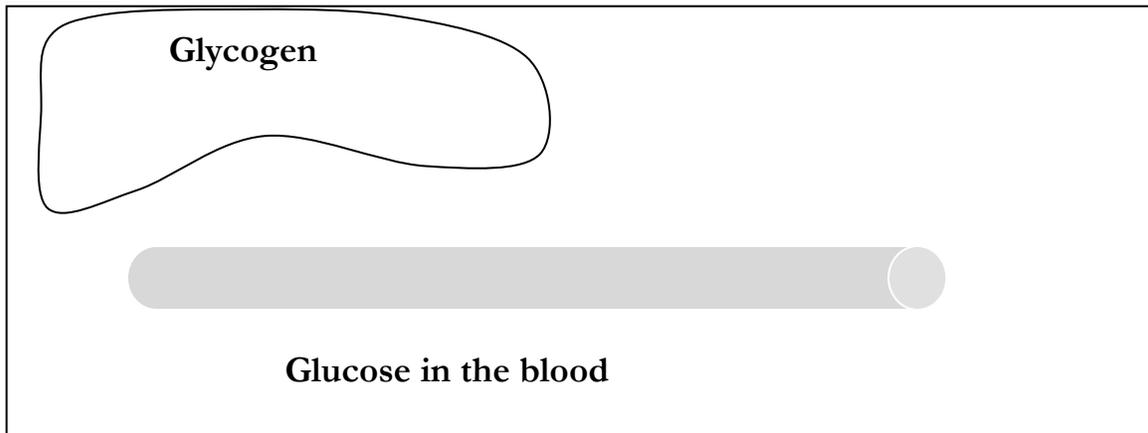
Describe other ways the body can be warmed up.

Controlling Glucose levels

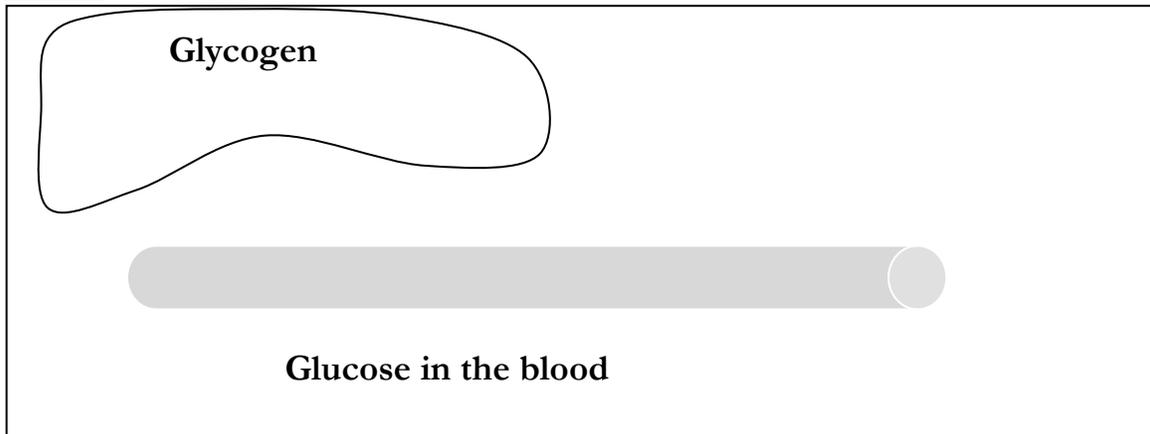
- Your cells also need an exact level of glucose in the blood.
- Excess glucose gets turned into _____ in the _____.
- This is regulated by 2 hormones (chemicals) from the _____ called:
 - _____
 - _____

Draw in what happens when there is too much glucose in the blood.

Before:

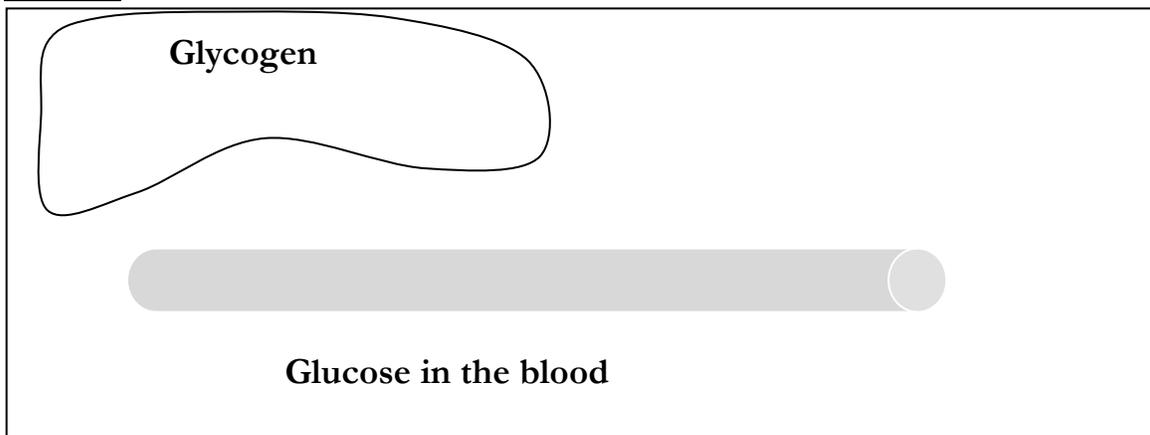


After:

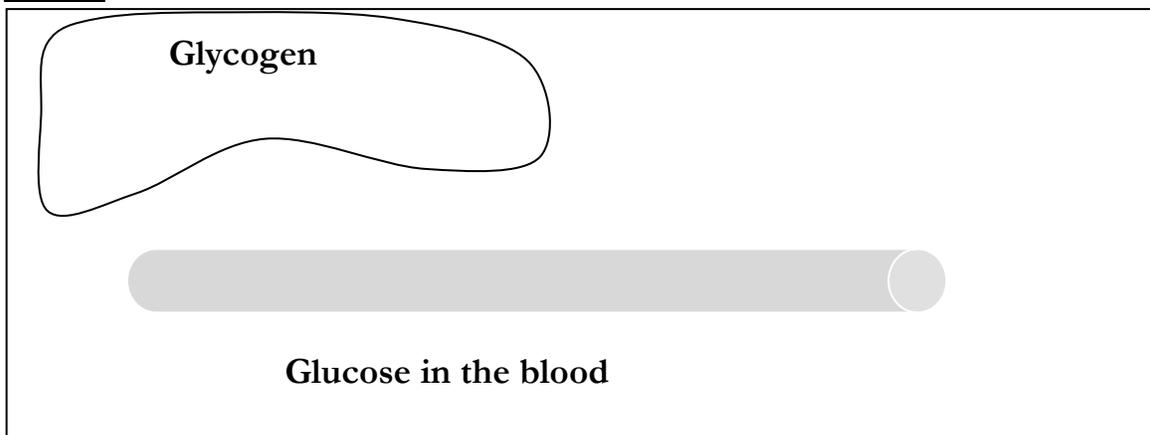


Draw in what happens when there is too little glucose in the blood.

Before:



After:



How does a lot of sugar entering the blood affect the activity of the pancreas and liver?

	pancreas	liver
A	secretes less insulin	adds sugar to blood
B	secretes less insulin	removes sugar from blood
C	secretes more insulin	adds sugar to blood
D	secretes more insulin	removes sugar from blood

Diabetes

1. What happens if no insulin is produced? _____

2. What is this condition called? _____
3. What can be done for people with this condition? _____

Draw the flow back diagram of glucose control on this page

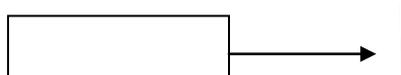
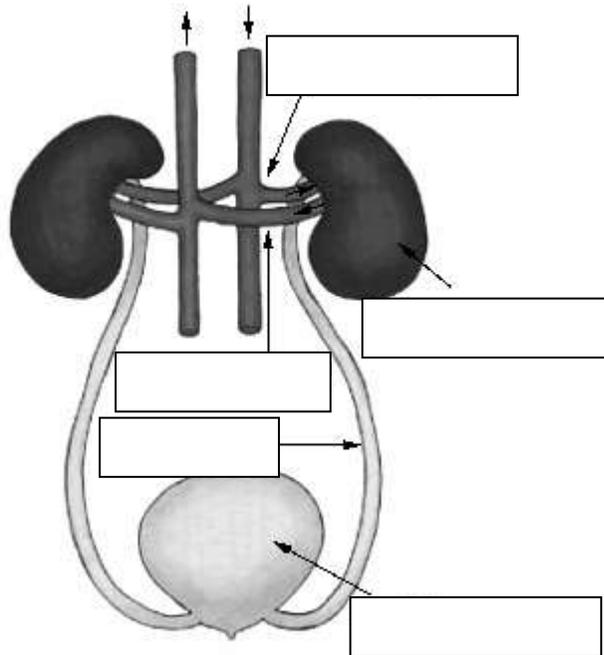
Kidneys

1. Describe the function of the kidneys

3. What is excretion?

4. Where does "dirty blood" enter the kidney?

Label this diagram to show the location of the kidneys:



5. Where is water content of the body controlled?

6. What is urea? _____

7. Where is it made? _____

8. What is it made from?

9. What element does it contain?

KEY WORDS

Nephron

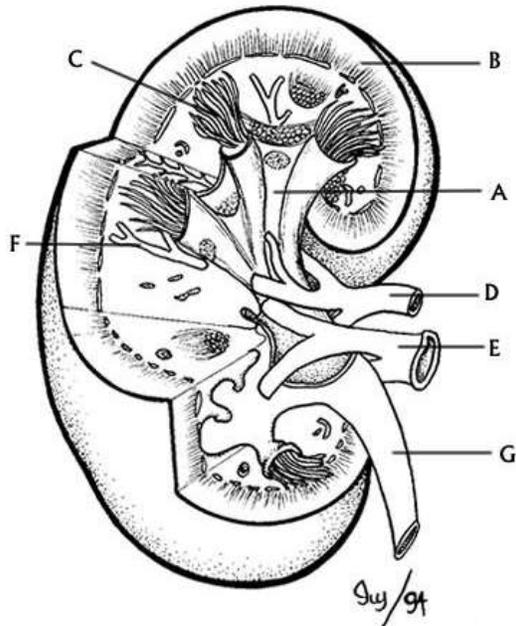
Glomerulus

Bowman's capsule

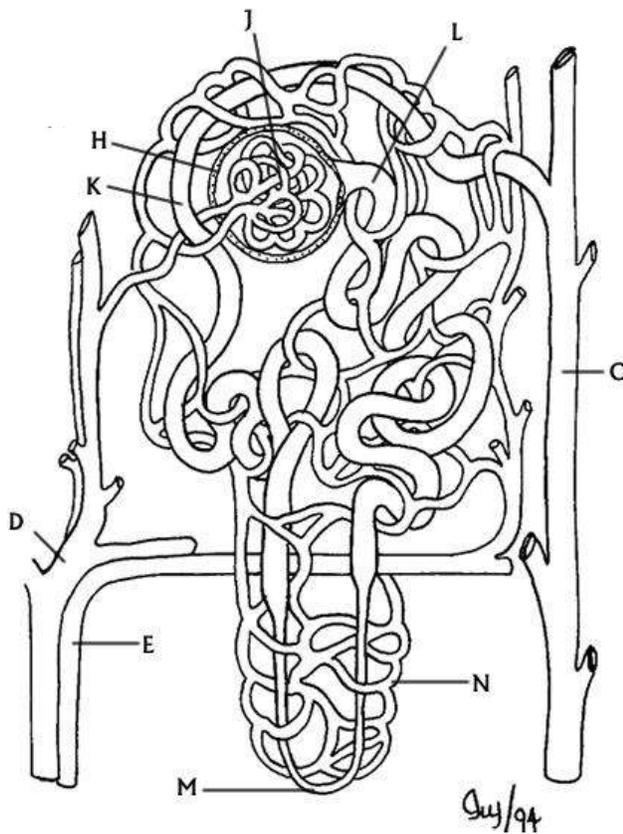
Glomerular filtrate

Loop of Henle

10. Label the parts of the kidney



11. Label the parts of the nephron



12. What are the processes of the nephron?

13. What happens during filtration?

14. What substances does the kidney tubule contain?

15. The kidney tubule reabsorbs different amounts of various substances called selective reabsorption. What happens during secretion

16. How much sugar is reabsorbed?

17. Are all the ions reabsorbed? Explain your answer.

18. Is all the water reabsorbed? Explain your answer.

19. If water content of the blood is **low**, how much water is excreted?
What is the urine like?

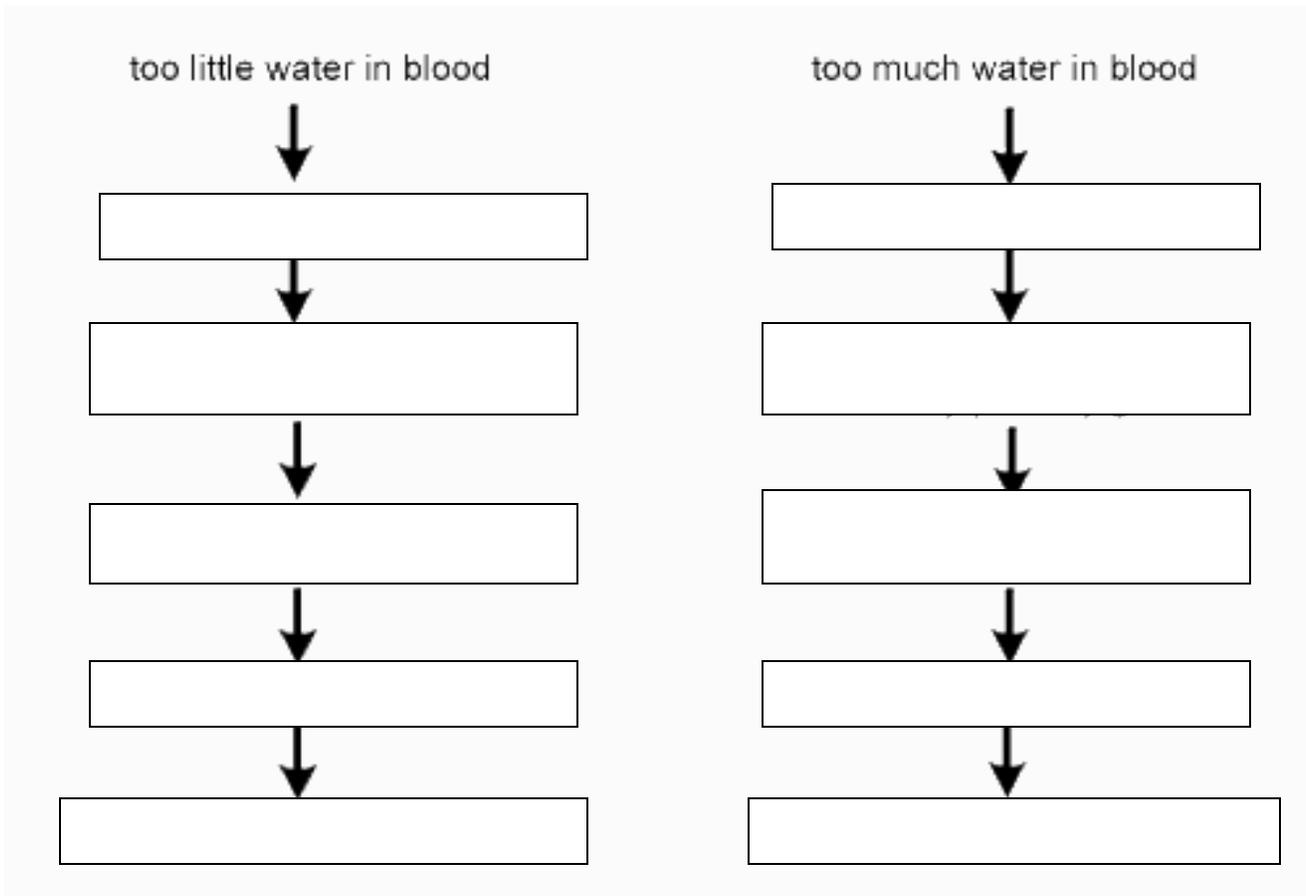
20. If water content of the blood is **high**, how much water is excreted?
What is the urine like?

21. What is contained in urine?

22. Where does urine go after leaving the kidney?

23. Where does the “clean” blood go?

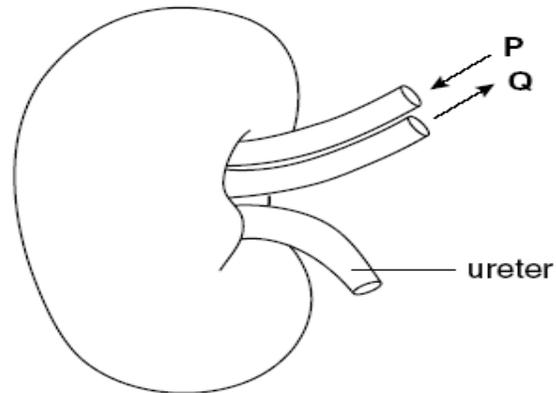
24. How is water controlled in the body?



Summary of urine production.

- Urea is a waste product made in the _____.
- Water content of the body is controlled in the _____.
- Urea, water and other waste makes up _____.
- Urine travels down the _____ and is stored in the _____.
- Urine is excreted through the _____.

The diagram shows a human kidney and its blood supply.



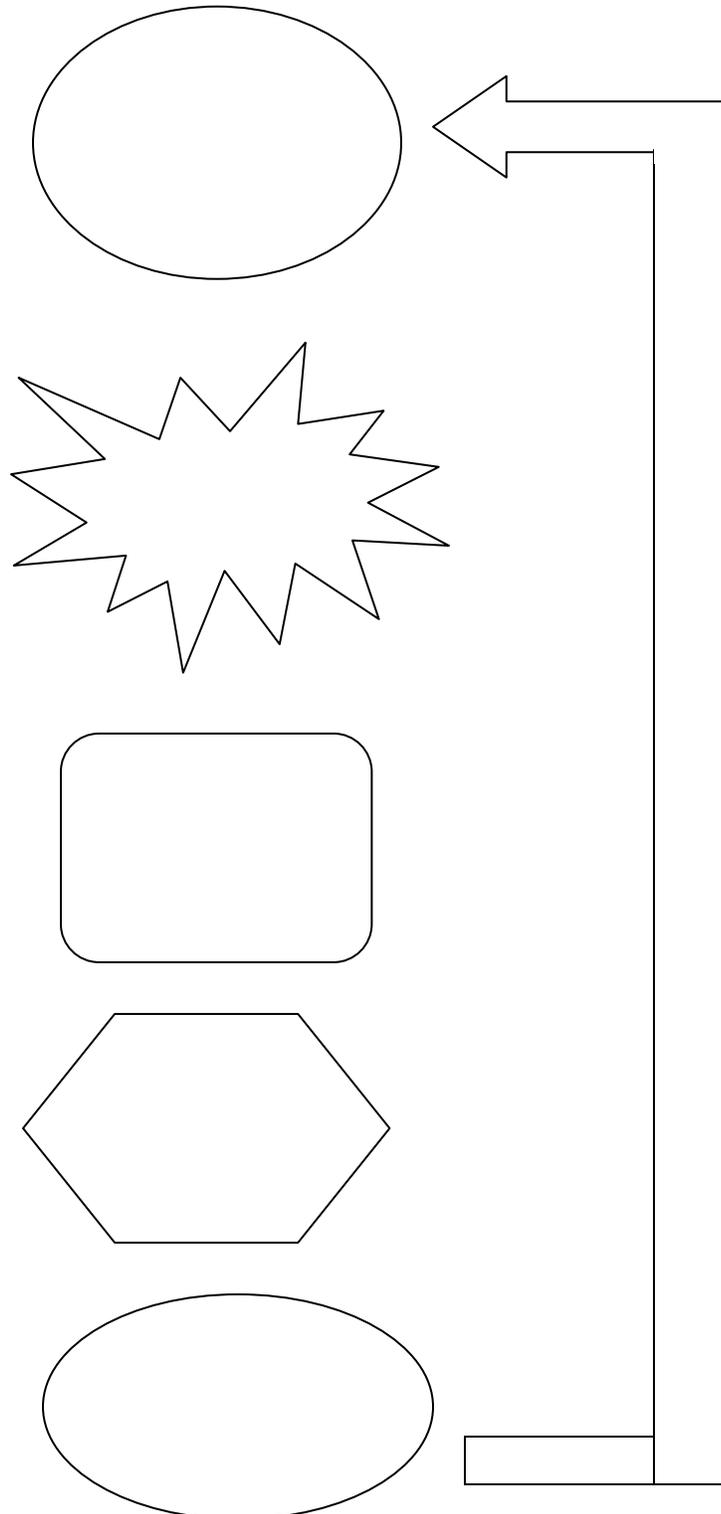
Compared with the blood in vessel **P**, the blood in **Q** has

- A** less urea and less oxygen.
- B** less urea and more oxygen.
- C** more urea and less oxygen.
- D** more urea and more oxygen.

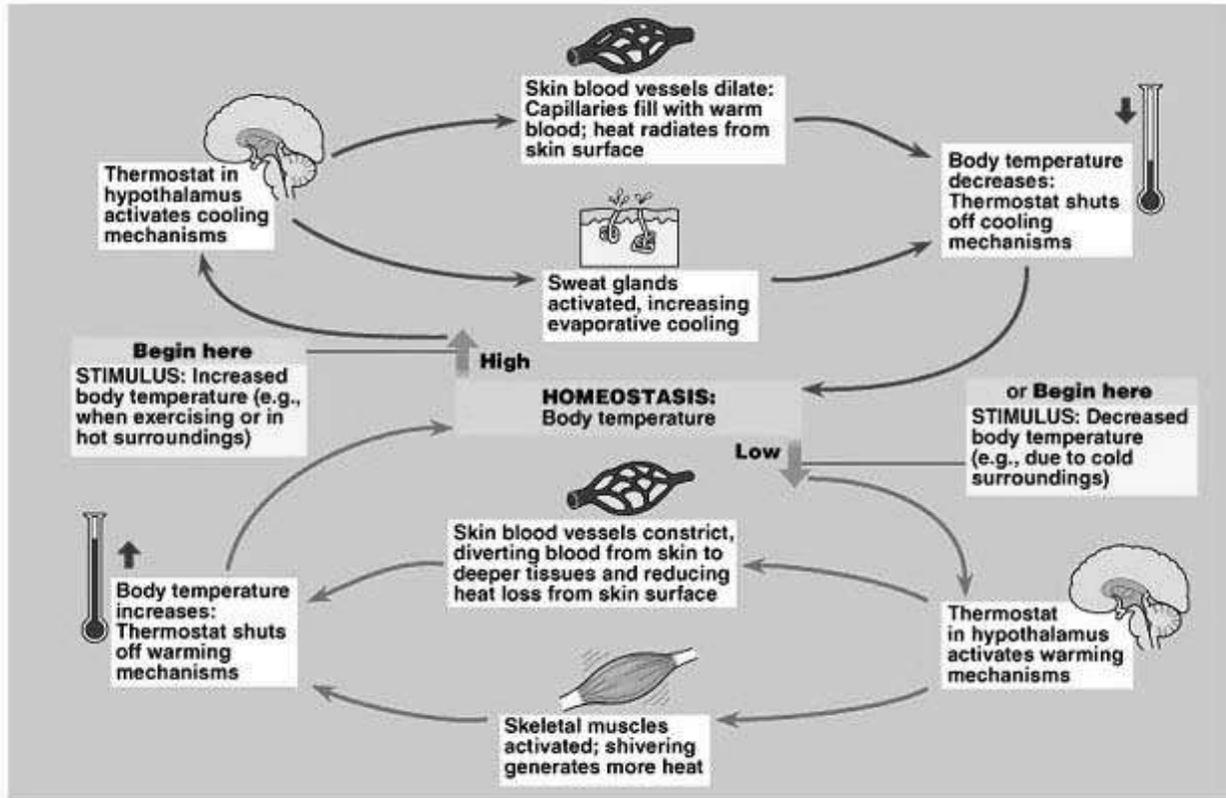
Negative Feedback

1. What is negative feedback?

2. Fill in the negative feedback diagram



All homeostatic mechanisms use negative feedback to maintain a constant value (called the set point). Negative feedback means that whenever a change occurs in a system, this automatically causes a corrective mechanism to start, which reverses the original change and brings the system back towards the set point (i.e. 'normal').



Use terms from the chapter to complete the concept map below.

