

Title - Controlling blood glucose levels

LEARNING GOALS

- Recap hormones and why body's reactions to hormones are usually slower than nervous reactions
- Understand where insulin is produced and how it regulates blood glucose
- Recall how diabetes is caused and how it can be controlled

What is Homeostasis?

Homeostasis - involves maintaining a constant environment in the body

- Homeostasis makes sure our body has the correct levels of;

Temperature

Water

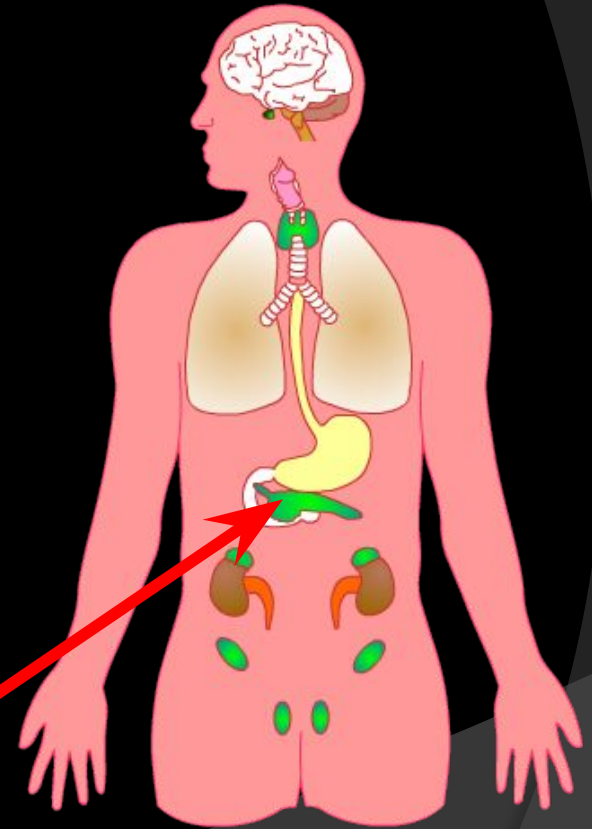
Oxygen

Carbon dioxide

Blood sugar

Recap: What is a hormone?

- A chemical
- Hormones are secreted from our glands into the bloodstream.
- Travel in blood to target organs
- Regulate the functions of many organs and cells
- Coordinate many processes in the body
- Which gland produces the hormone insulin?



Pancreas

Hormones generally produce a slower reaction than nerve impulses - Why?

- Hormones co-ordinate long-term changes such as maturation
- Hormones have to be made and then released from cells where they need to travel to their target organs in the blood
- Nerve impulses are generated quickly and travel directly to the effectors

The Pancreas



The pancreas secretes insulin in response to glucose levels in the blood

- Insulin controls.....

blood sugar levels
in our bodies.

- Glucose is a sugar needed by cells for **Respiration**.
- It is **important** that the concentration of glucose in the blood is kept at a constant level.

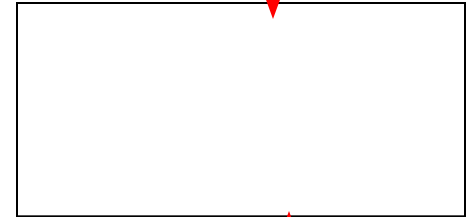
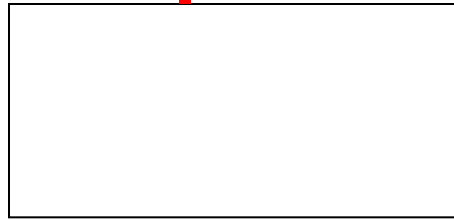
Changing glucose levels

- After a meal the level of glucose in our bodies [increases]?
- After exercise the levels of glucose in our bodies [decreases]?
- Why do you think this happens?

Controlling Blood Glucose Levels

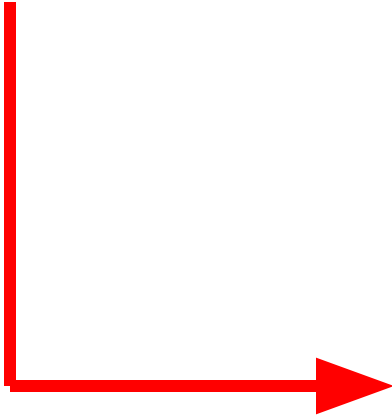
Glucose rises
due to _____

Insulin produced by
the _____
travels in the _____
to the liver and
causes it to take up
excess _____ and
store it as _____.



Glucose falls
due to _____

_____ is released
by the pancreas and
causes _____ in
the liver to be
converted back to
glucose



Controlling Blood Glucose Levels

Glucose rises
due to eating

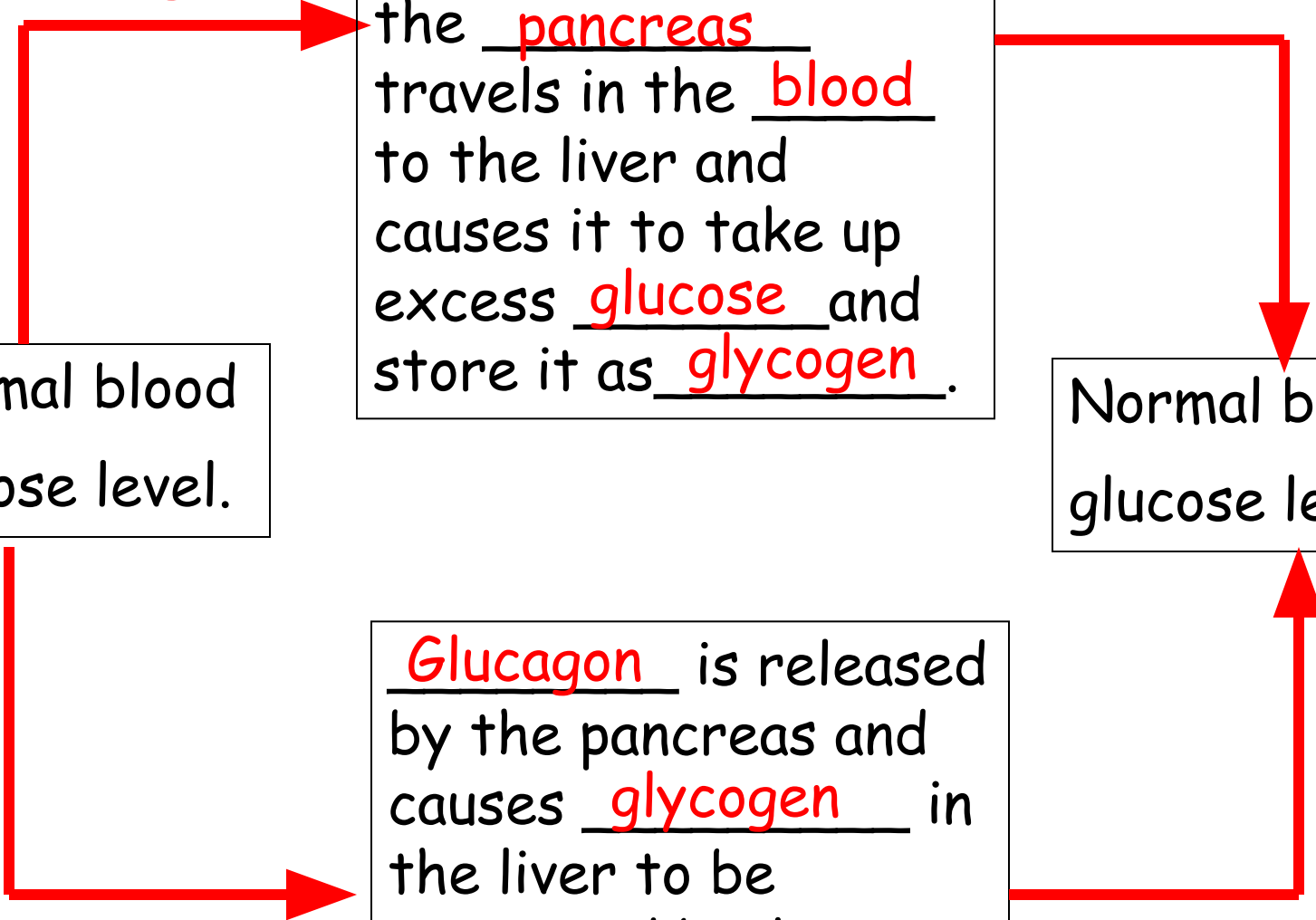
Insulin produced by
the pancreas
travels in the blood
to the liver and
causes it to take up
excess glucose and
store it as glycogen.

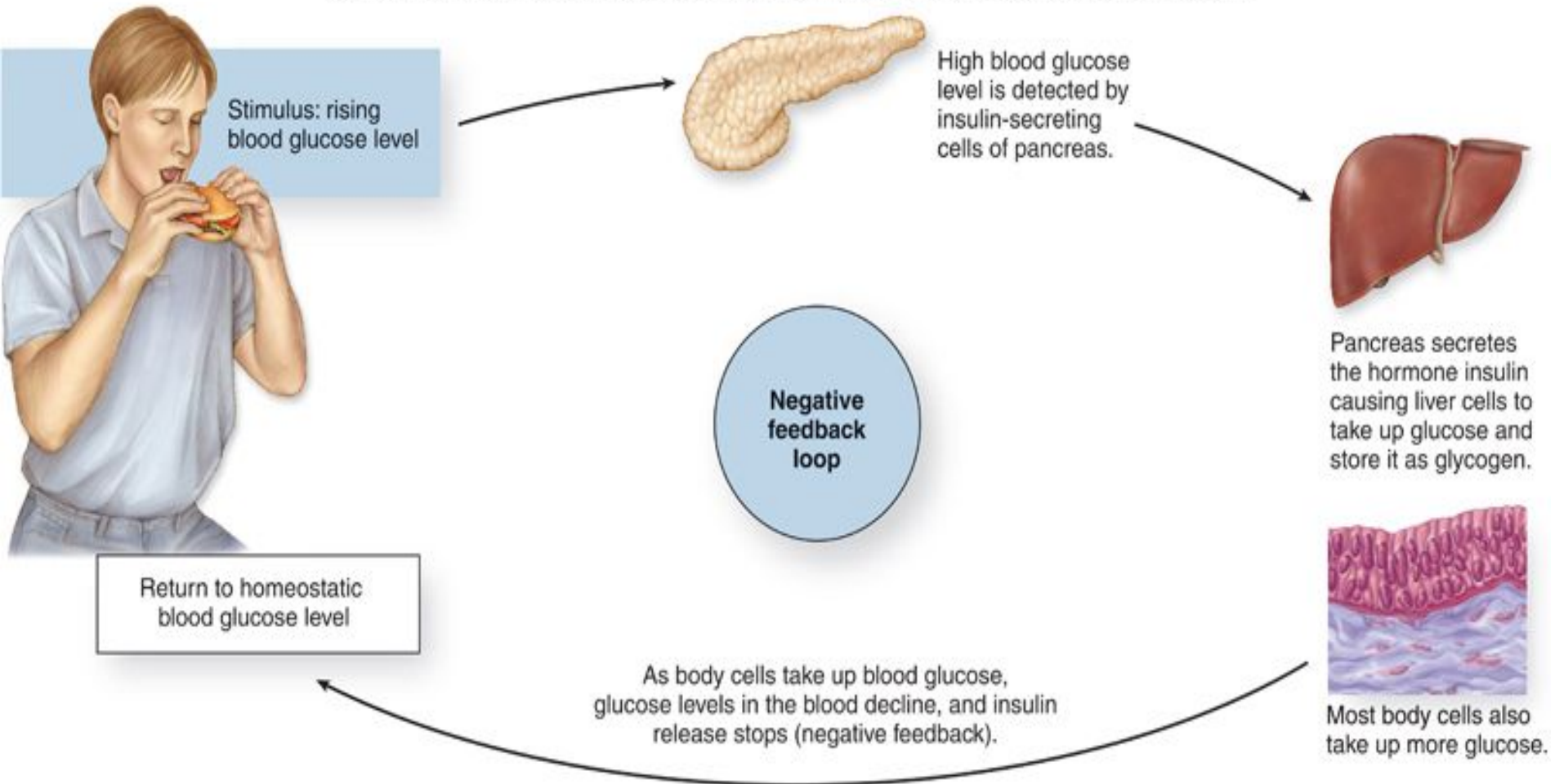
Normal blood
glucose level.

Normal blood
glucose level.

Glucose falls
due to exercise

Glucagon is released
by the pancreas and
causes glycogen in
the liver to be
converted back to
glucose





What would happen if my pancreas did not produce enough insulin?



Symptoms of Diabetes



Glucose in urine

Thirsty



Tiredness



People with diabetes test their blood
to see how much glucose is in it and
inject with insulin accordingly



Use the internet have given you to fill in the table about diabetes

Type of diabetes	Cause	Method of control

Extension: How is the insulin that is injected by diabetics produced?

How can diabetes sufferers control their symptoms?

- Making sure that they do not eat too much sugary food
- Carry out exercise to convert excess glucose to energy
- Amount of insulin injected depends on the amount they eat and how active they are