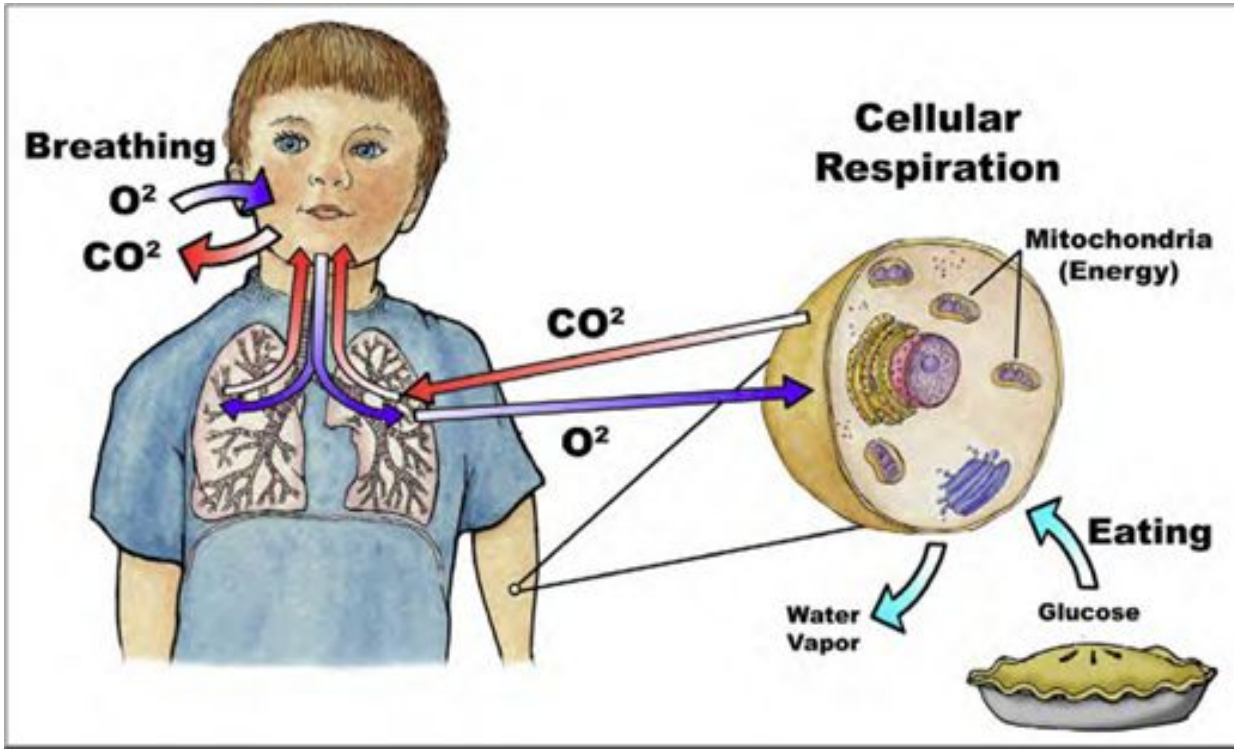
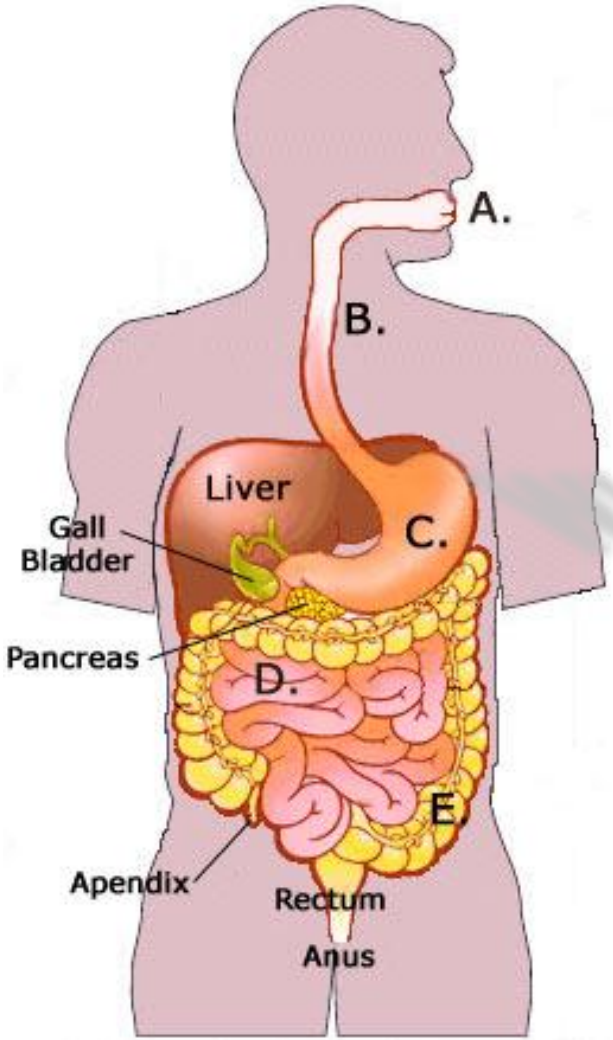
Homeostasis and Glucose

What happens to sugar after it leaves the small intestine?

Glucose travel from the small intestine through blood to all the cells in your body.

Your body uses the **glucose** for cellular respiration to make **ATP**.





Where are the liver and pancreas?

Hormones

Chemical messenger

Regulating blood sugar levels: insulin and glucagon

Produced in pancreas

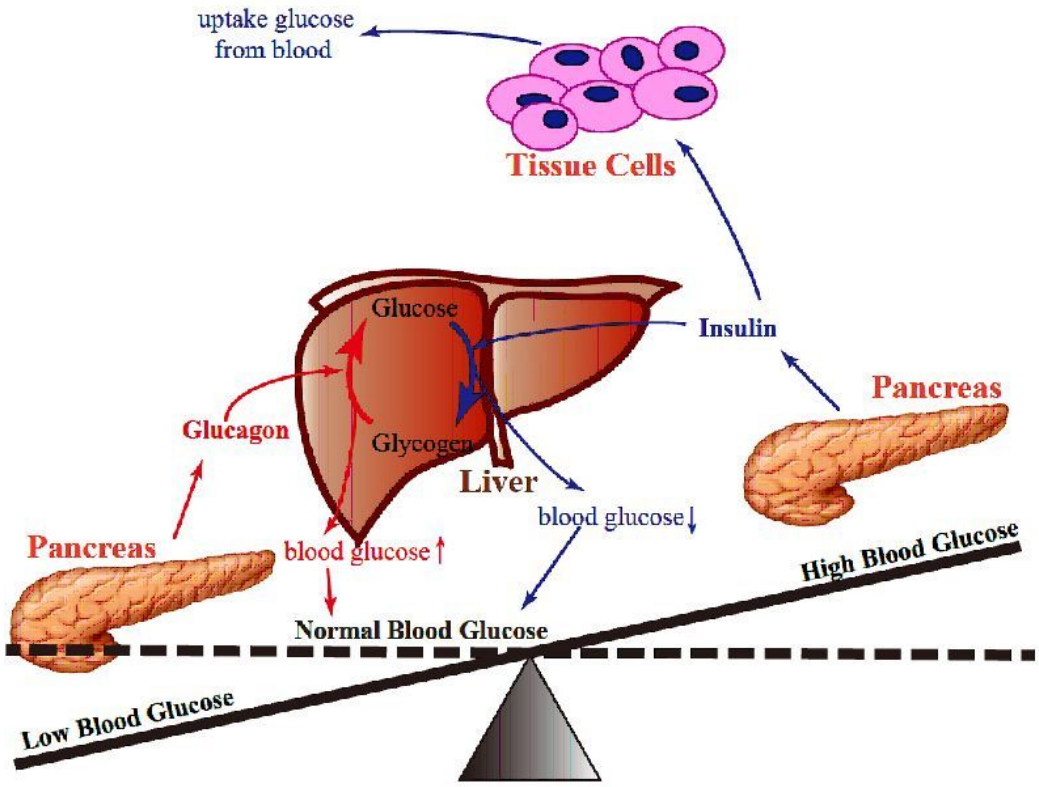


Figure 1 Homeostatic regulation of blood glucose by pancreas

Insulin

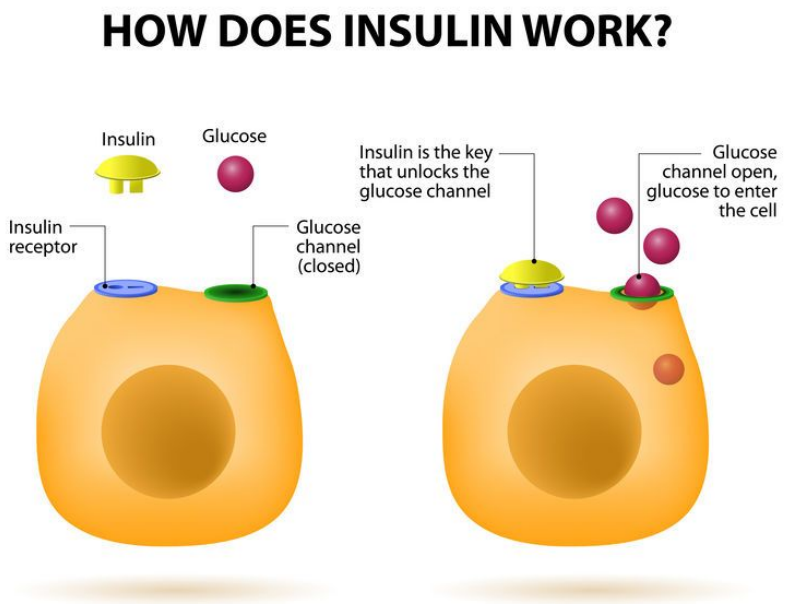
Too much sugar in the blood from small intestine

Insulin is released

Insulin binds to receptors on cells

These send a message to the cell to open the “gate” to let glucose in

Glucose is used for cellular respiration to make ATP or stored in liver/fat

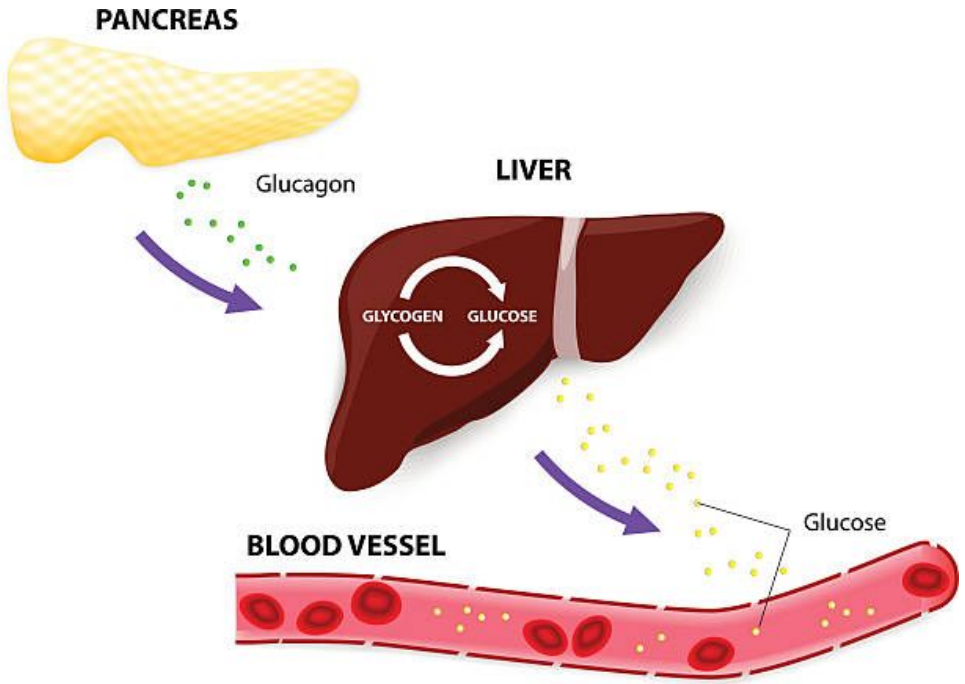


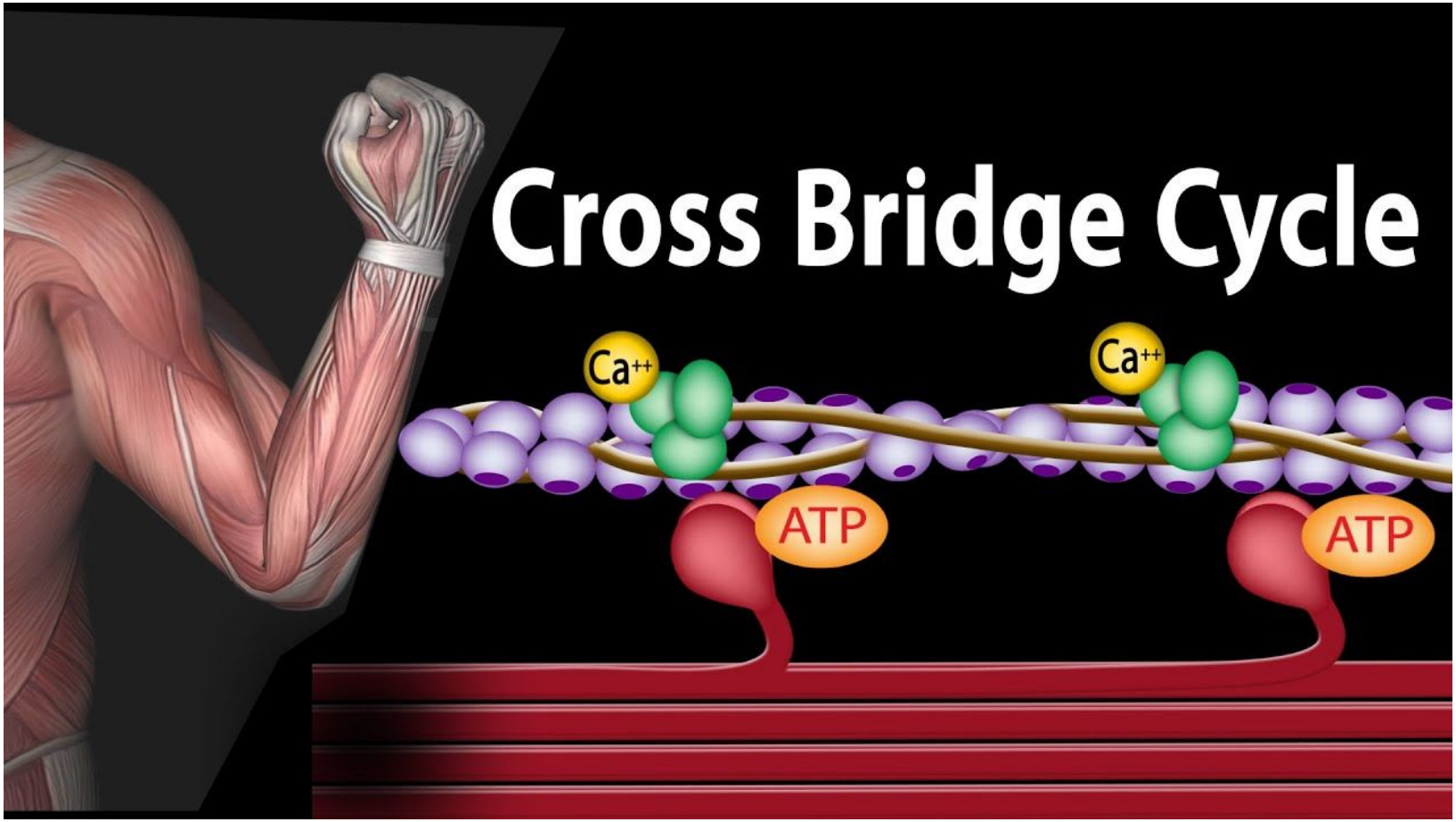
Glucagon

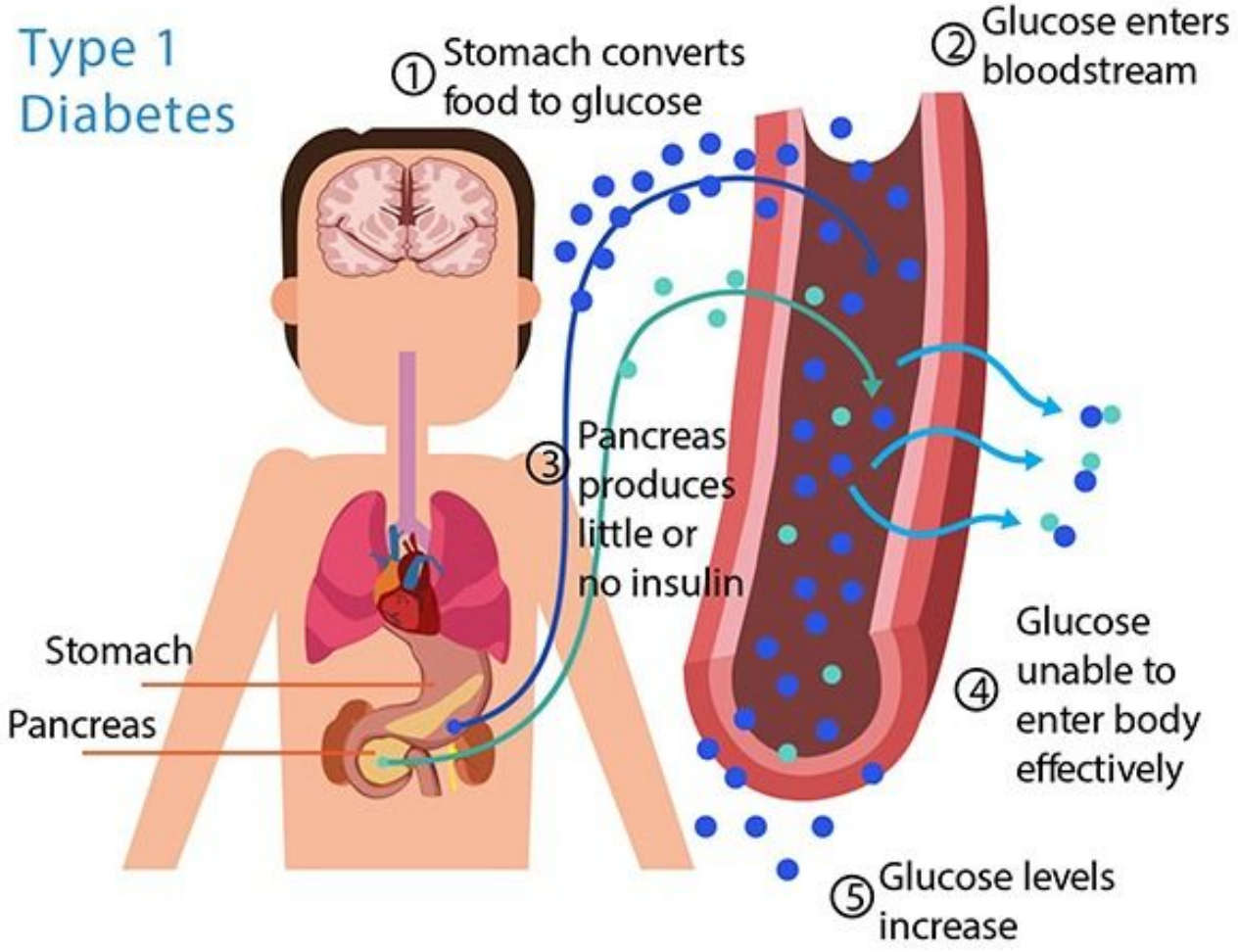
Too little sugar in the blood from not eating

Glucagon is released into blood

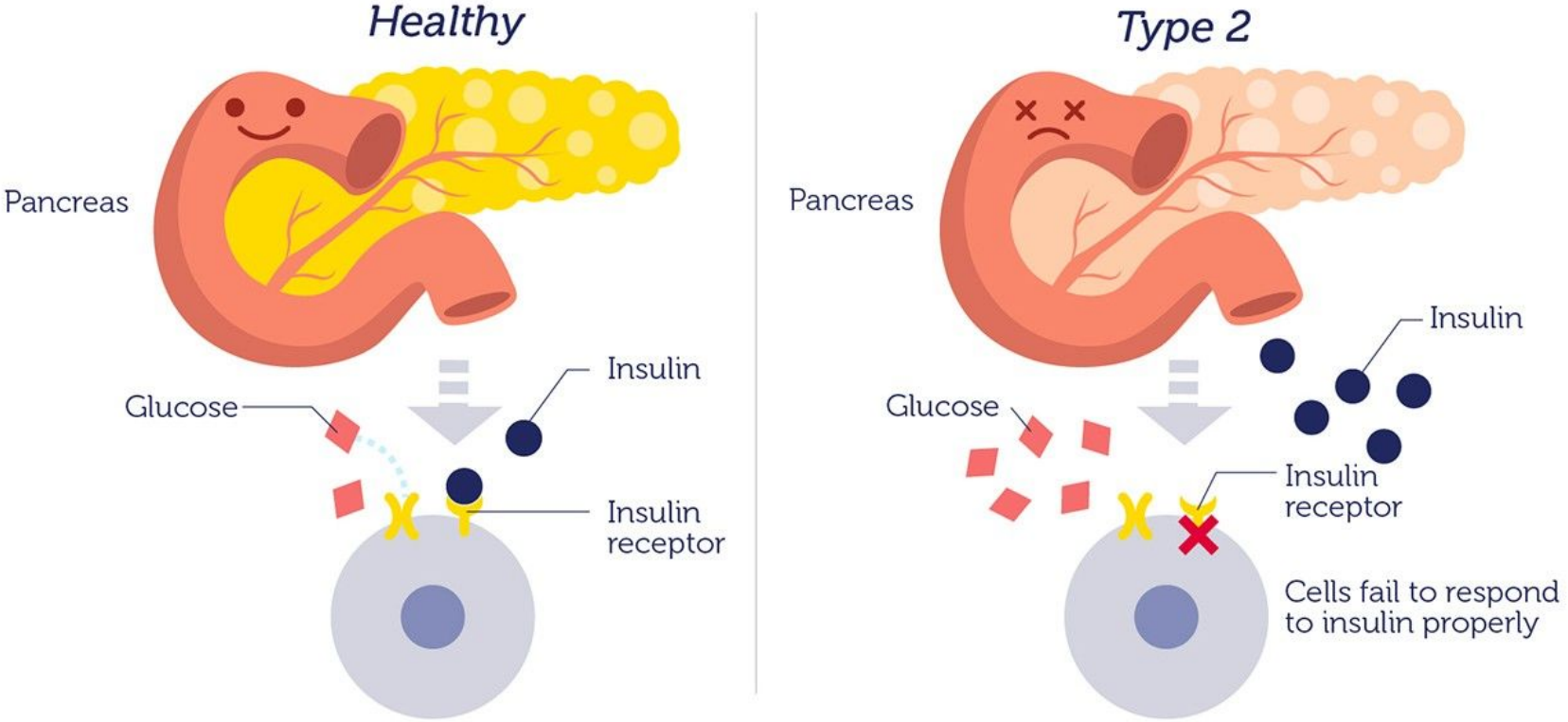
Goes to the liver where glycogen are broken

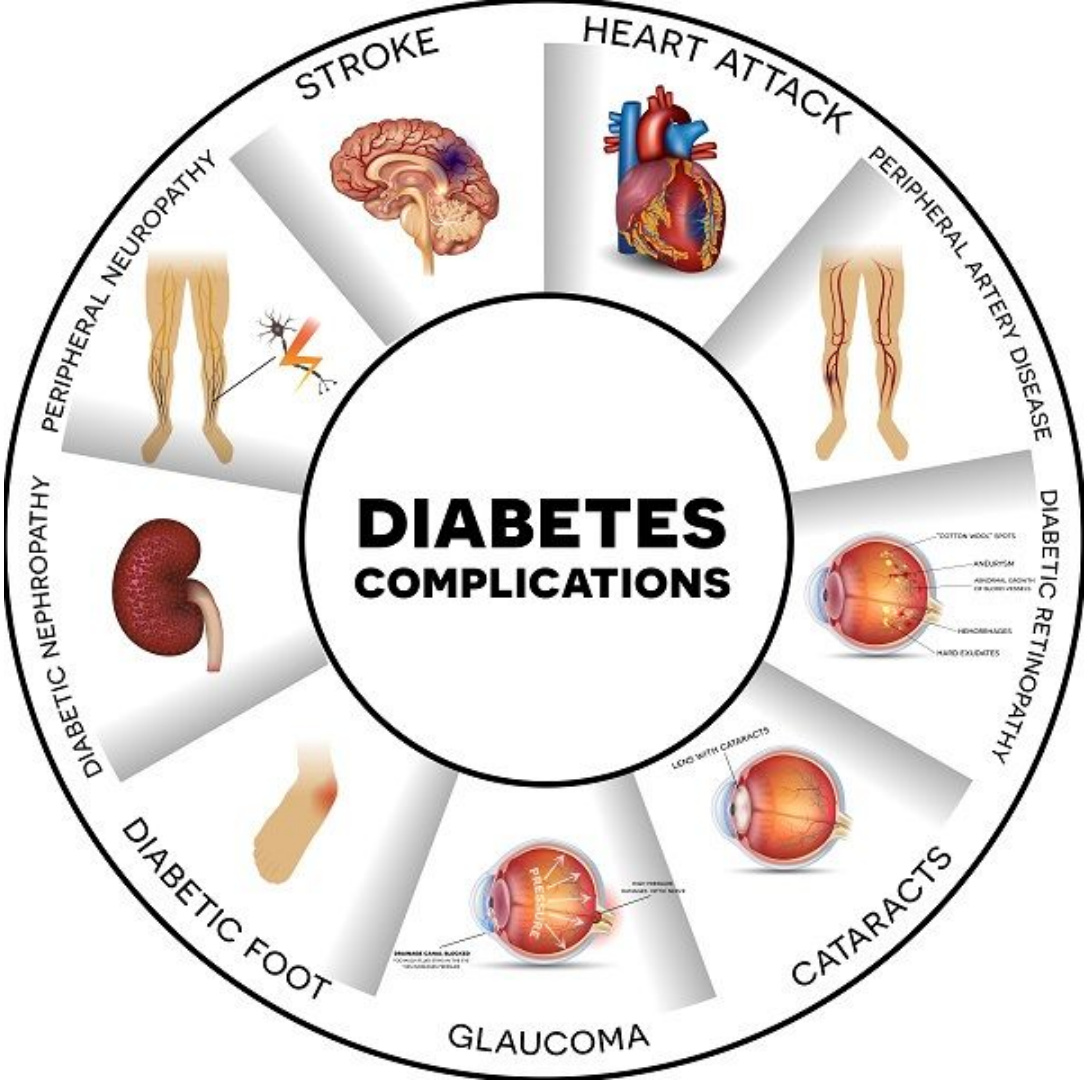



Cross Bridge Cycle
Ca++
Ca++
ATP
ATP


Type 1 Diabetes
① Stomach converts food to glucose
② Glucose enters bloodstream
③ Pancreas produces little or no insulin
④ Glucose unable to enter body effectively
⑤ Glucose levels increase
Stomach
Pancreas

ARE YOU AT RISK OF TYPE 2 DIABETES?




DIABETES
COMPLICATIONS
STROKE
HEART ATTACK
PERIPHERAL ARTERY DISEASE
DIABETIC RETINOPATHY
CATARACTS
GLAUCOMA
DIABETIC FOOT
DIABETIC NEPHROPATHY
PERIPHERAL NEUROPATHY

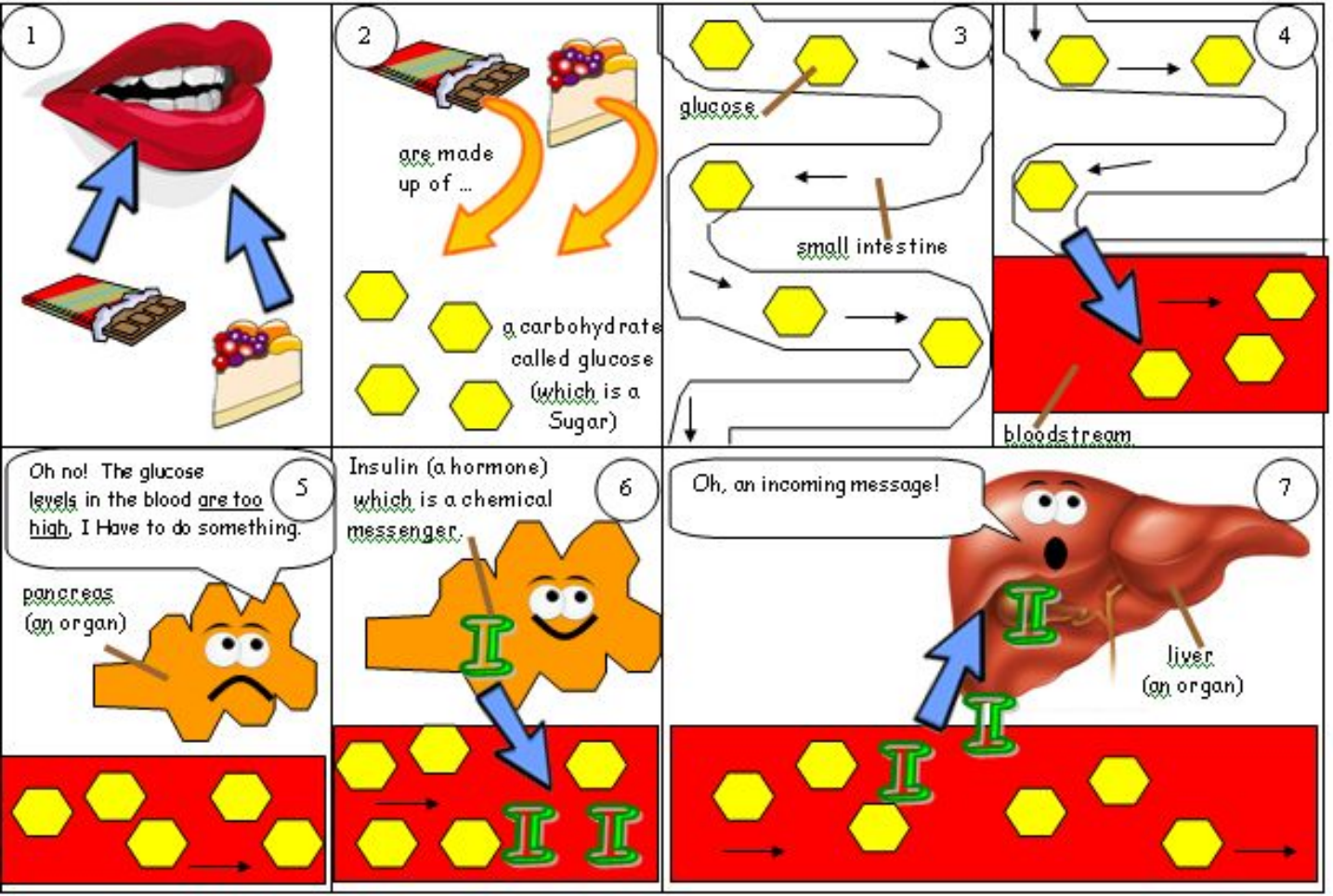
Objective: To **explain** the **processes** involved in maintaining a **constant level** of **glucose (sugar)** in the **blood.**

1. Look at each box in the storyboard and discuss what it is showing.

2. Write down a caption which summarize each box. Answer questions 1-10 below.

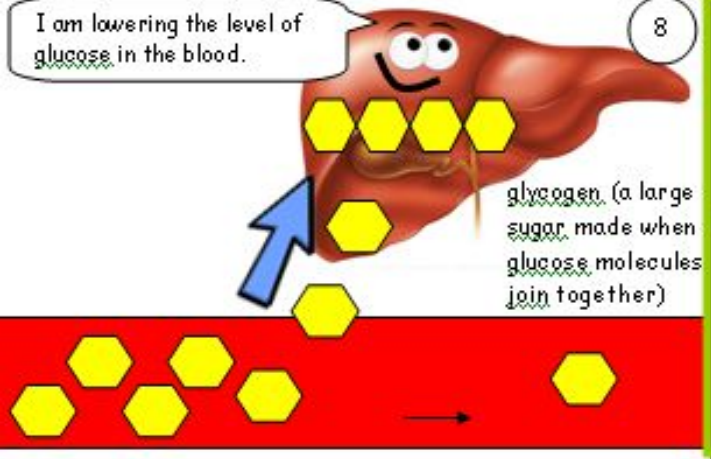
3. You have 15-20 minutes.

You have
15-20 mins


1
2
are made up of ...
a carbohydrate called glucose (which is a Sugar)
3
glucose
small intestine
4
bloodstream
5
Oh no! The glucose levels in the blood are too high, I Have to do something.
pancreas (an organ)
6
Insulin (a hormone) which is a chemical messenger.
7
Oh, an incoming message!
liver (an organ)

I am lowering the level of glucose in the blood.

8



glycogen (a large sugar made when glucose molecules join together)



After a few hours

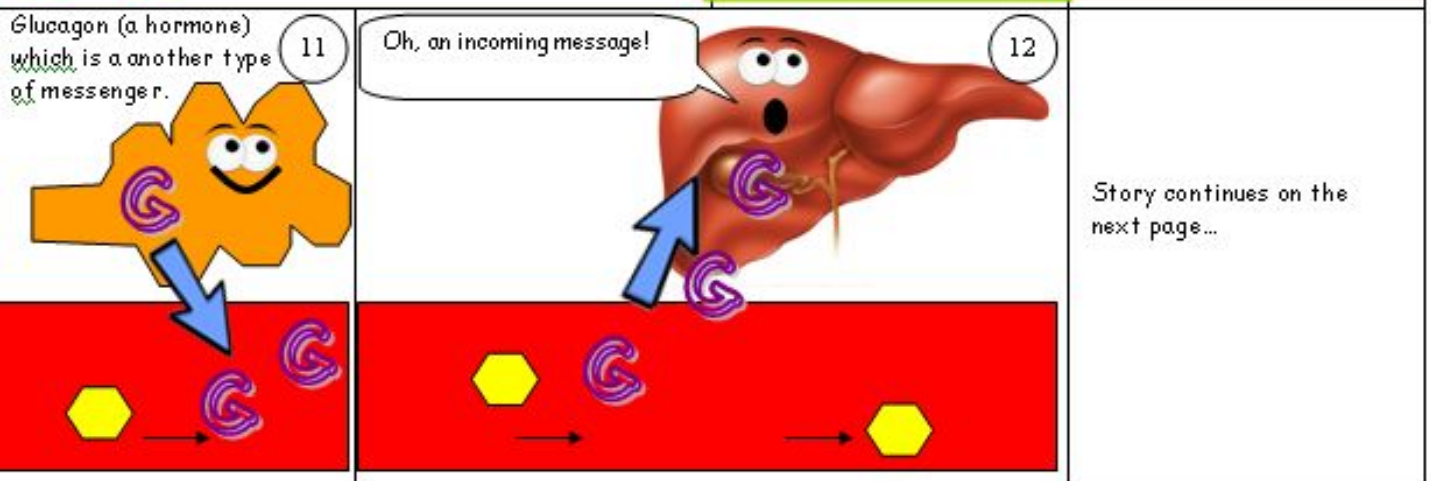
9

Oh no! The glucose levels in the blood are too low now, I Have to do something.

pancreas (an organ)



10



Glucagon (a hormone) which is another type of messenger.

11

Oh, an incoming message!

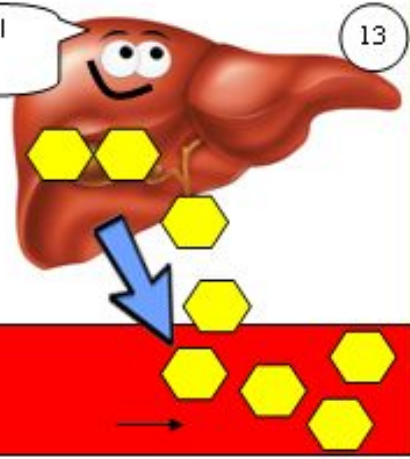
12

Story continues on the next page...

13

I am increasing the level of glucose in the blood.

glycogen is split up into individual molecules of glucose again.



14



After an hour or so...

15

IT'S DINNERTIME!



...and there's carbohydrates in the food...



16

SO WHAT DO YOU THINK HAPPENS NEXT?



Objective: To **explain** the **cause** of **diabetes**.

1. Look at each box in the **new** storyboard and discuss what it is showing.

2. Write down a caption which summarize each box to help explain the cause of diabetes.

3. Answer questions 1-10 below.

You have 15-20 mins

Objective: To explain the treatment for diabetes.

Examine the cards showing the treatment for diabetes.

Apply the knowledge and understanding you have gained about diabetes to explain the science behind each treatment

You have 15-20 mins