

Food Matters

(OCR)

The Nitrogen Cycle

4. Denitrifying bacteria convert nitrates and ammonium compounds into atmospheric nitrogen

N_2 in air

1. Nitrogen-fixing bacteria convert N_2 in the air into nitrates

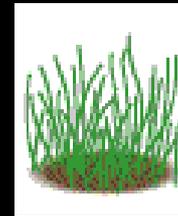
1. Fertilisers

Lightning
Denitrifying bacteria



Waste and dead animals

5. Nitrifying bacteria convert ammonium compounds into nitrates



Nitrates in the soil

6. Nitrates taken in by plants



3. Decomposers break down waste products and dead animals and plants to form AMMONIUM COMPOUNDS



2. Plants are then eaten by animals - the nitrogen becomes PROTEIN

Farming Methods

There are basically two types of farming method; "intensive" and "organic":

Intensive

Organic

Cost

Produce

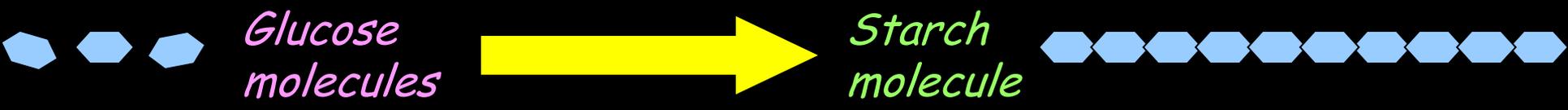
Fertilisers

Space

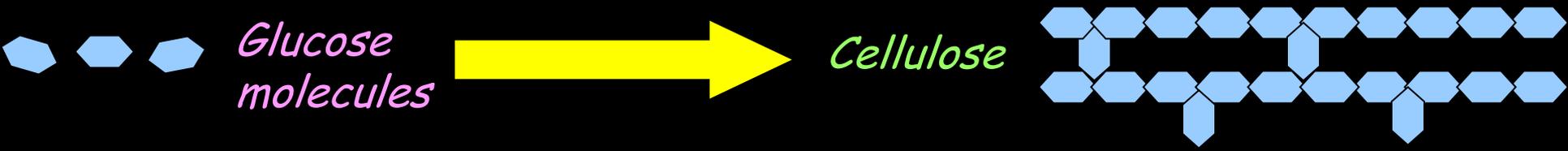
Labour done by...

What is glucose (food) used for?

1) Glucose (sugar) can be used to make long chains of starch...



2) Glucose can be used to make cellulose for sugars...



3) Glucose can be combined with nitrates to make proteins (for growth)...



Artificial Additives

Why do we use additives?

Some examples:

Additive	Interesting information
Flavour enhancers	Improve the taste
Colour enhancers	Make the food look more appealing
Preservatives	Makes the food last longer
Vitamins and minerals	Can be used to replace those lost during cooking
Sweetener	Used to reduce the amount of sugar needed
Antioxidant	Used to stop fats or oils reacting with oxygen
Emulsifier	Used to mix ingredients like oil and water

E numbers

If artificial additives are "approved" they are given an E number:

E100-E199 (colours)

E200-E299 (preservatives)

E300-E399 (antioxidants, acidity regulators)

E400-E499 (thickeners, stabilizers, emulsifiers)

E500-E599 (acidity regulators, anti-caking agents)

E600-E699 (flavour enhancers)

E900-E999 (miscellaneous)

E1000-E1999 (additional chemicals)

Allergies

Some common allergies:

Plant	Chemical	Effect
Wheat	Gluten	Damages the small intestine (known as coeliac disease)
Peanuts	Proteins in the nuts	Allergic reaction in fresh, cooked and roasted nuts

Harmful food can get into what we eat through a number of mechanisms:

- Contamination during storage
- Use of pesticides and herbicides
- Cross contamination during preparation



How to avoid exposure to harmful chemicals

1) Keep a hygienic kitchen

2) Cook food properly

3) Don't re-freeze meats

4) Regularly clean the fridge

5) Look for warning symbols



The Food Standards Agency (FSA)

The Food Standards Agency was set up in 2000 to help consumers know exactly what is in their food:



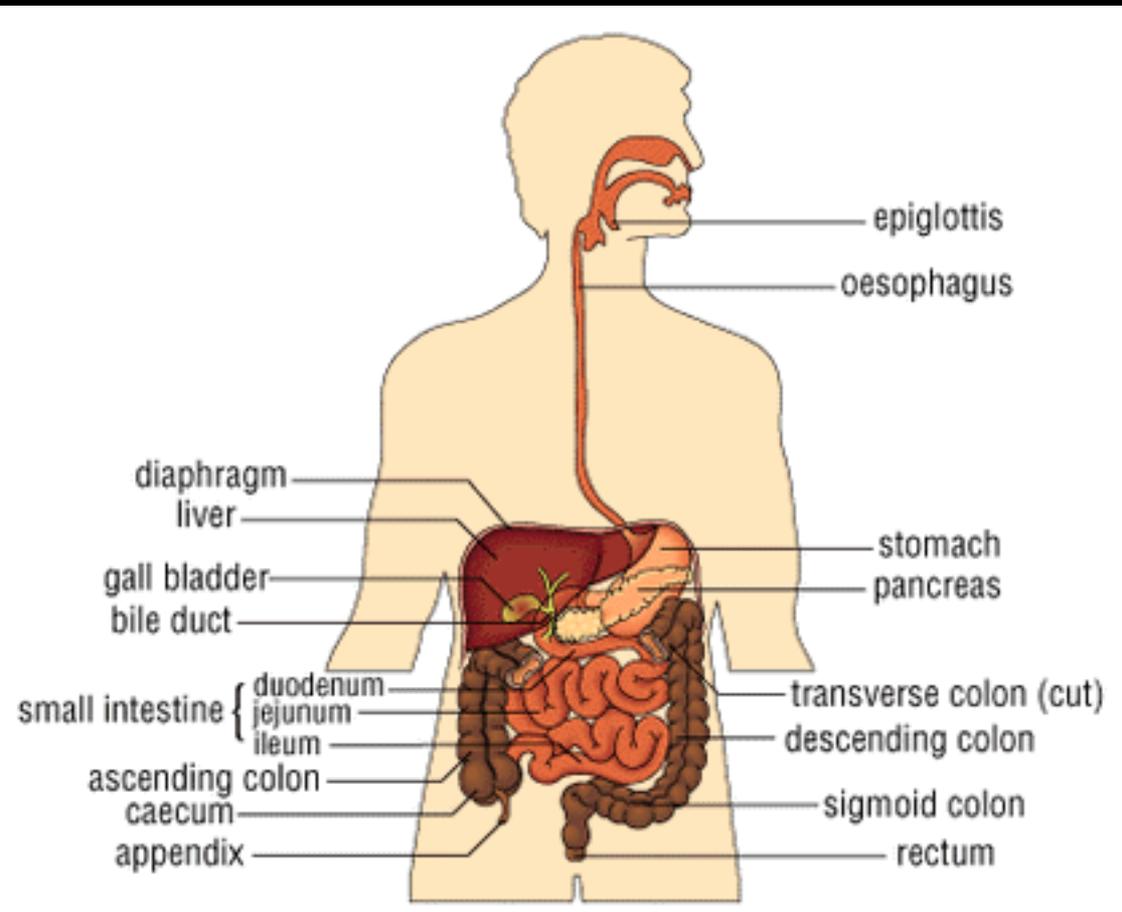
Here's a little food for thought. All of the ingredients we use are non-GM



look behind the label

The digestive system

The whole point of digestion is to break down our food so that we can get the bits we need from it...



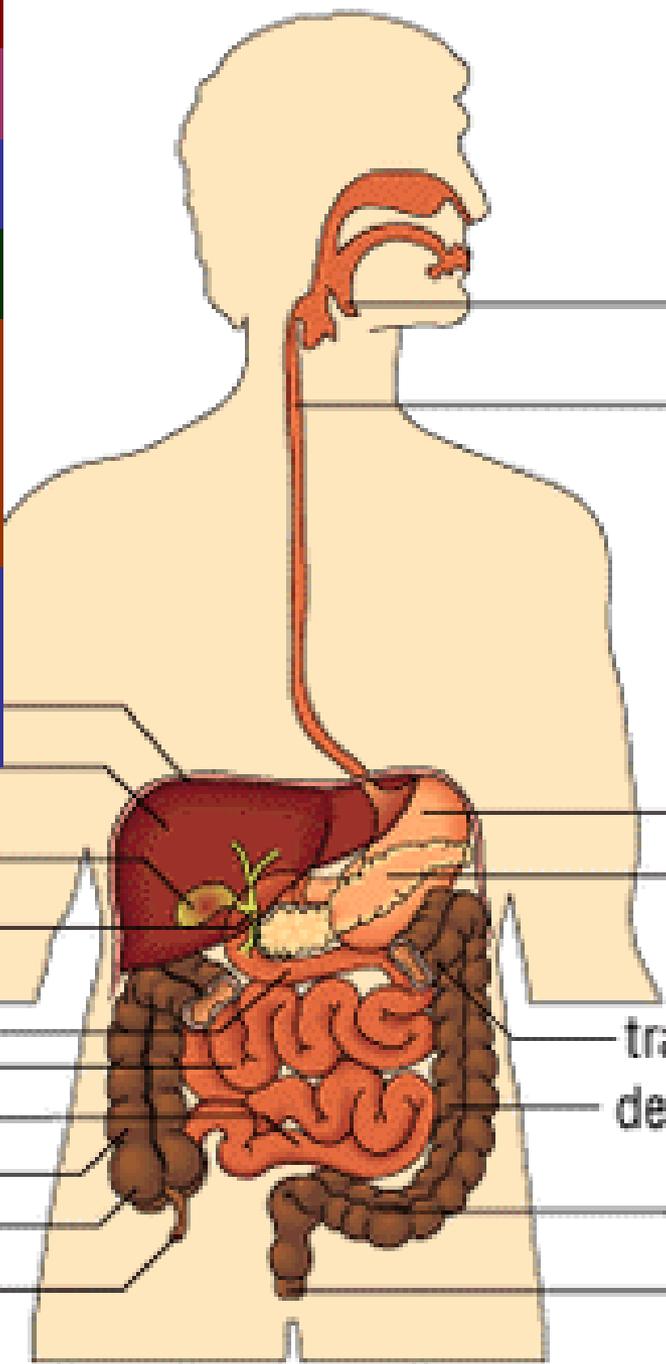
The main foods affected are **CARBOHYDRATES** - these are broken down into **GLUCOSE**.

Starch molecule



Glucose molecules

- 1) In the mouth food
 - 2) In the stomach
 - 3) In the small
 - 4) In the large
 - 5) The waste faeces are removed through the anus
- Small foods are absorbed into the bloodstream.



ep
oeso

liver
gall bladder
bile duct

stomach
pancreas

small intestine {
duodenum
jejunum
ileum
ascending colon
caecum
appendix

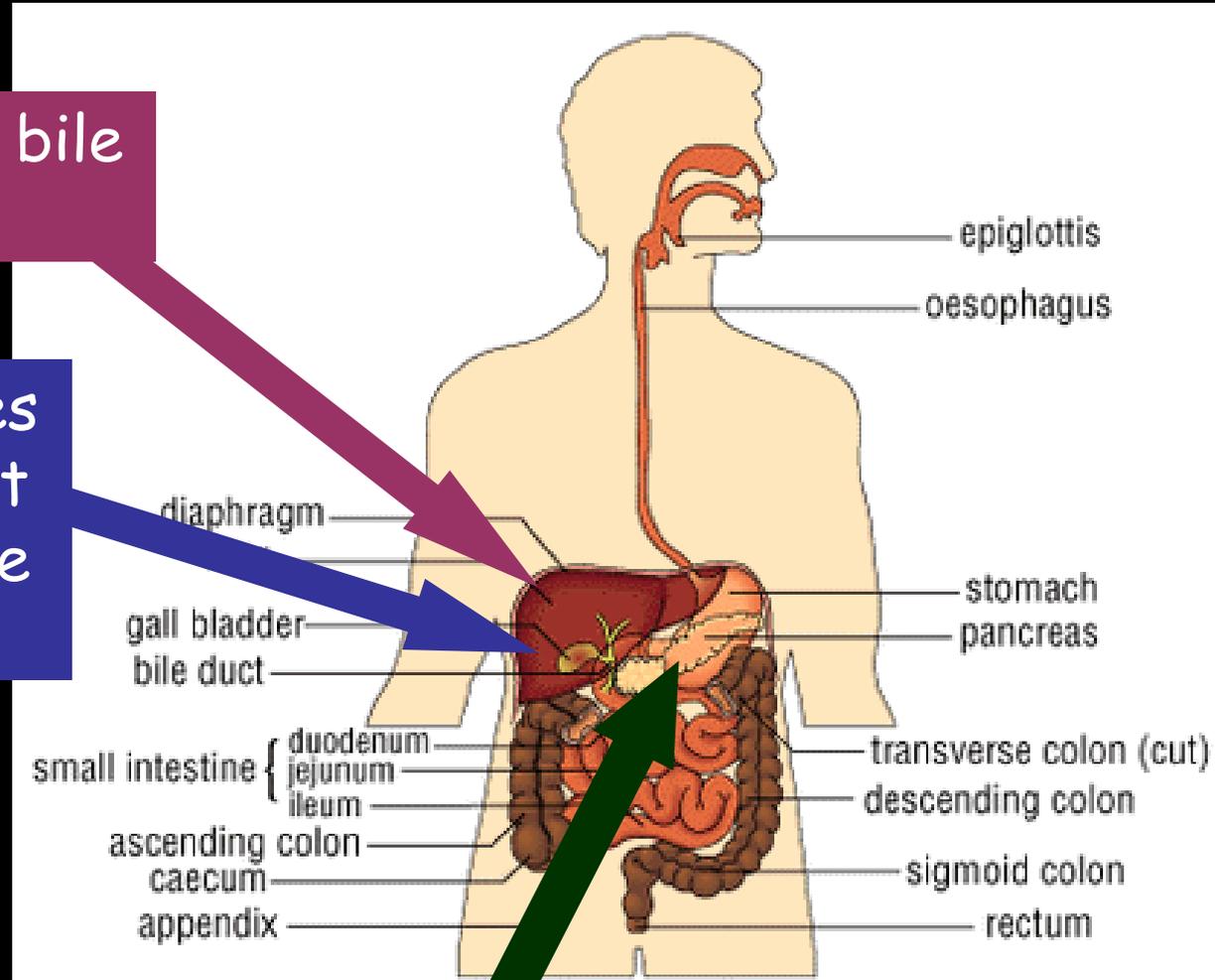
transverse colon (cut)
descending colon
sigmoid colon
rectum

Other facts to digest...

The liver produces bile to help digest fat

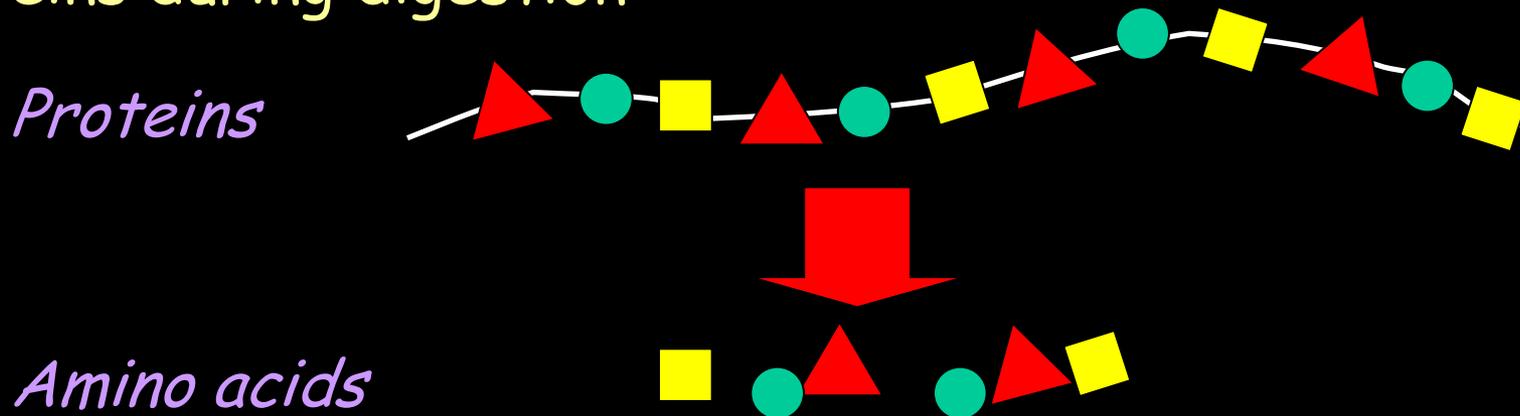
The gall bladder stores bile before releasing it into the small intestine via the bile duct

The pancreas produces lots of enzymes



Amino acids

Amino acids are chemicals produced by the breaking down of proteins during digestion:



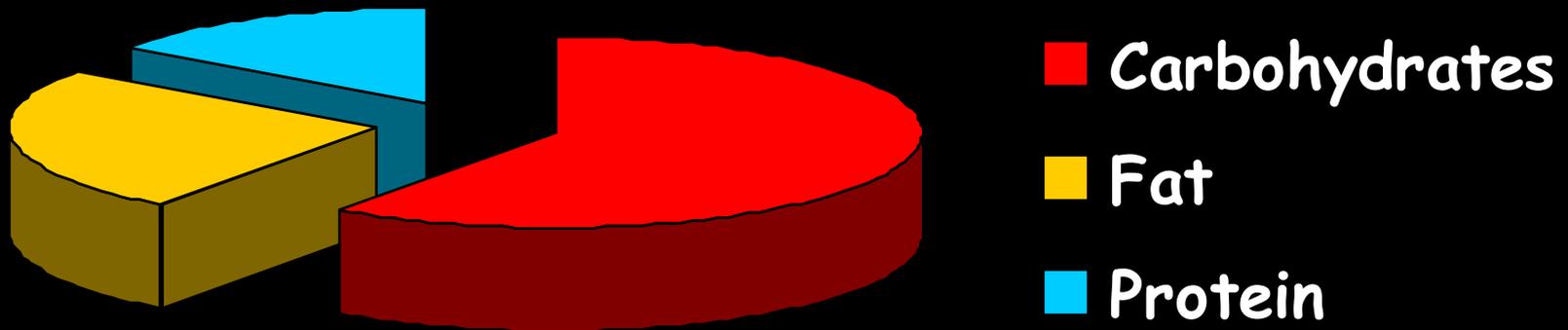
Amino acids build up in cells until _____ are made, and these proteins are used for _____, hair etc.

In a healthy person excess amino acids are transported to the _____ where they are broken down into urea. Urea is then transported into the _____ where it is filtered out before being excreted in _____.

Words - muscles, proteins, kidneys, liver, urea

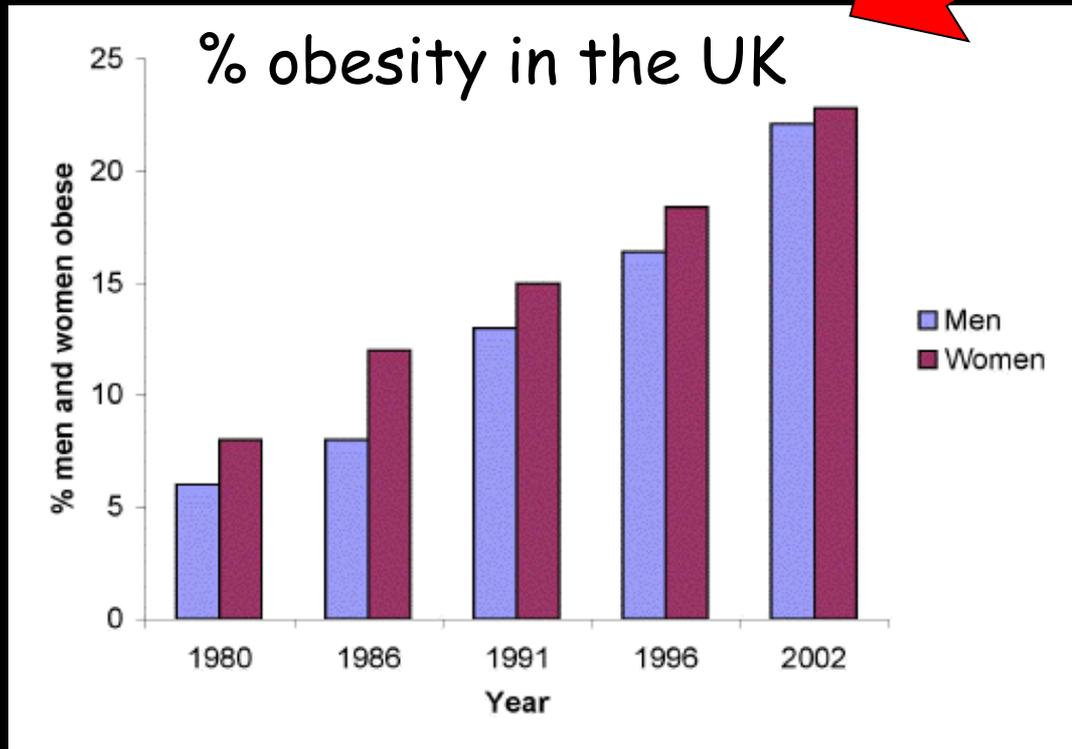
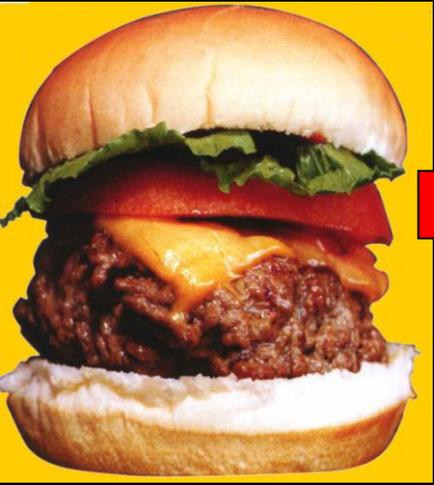
Balanced diet

A balanced diet should contain fats, proteins and carbohydrates in roughly these amounts:



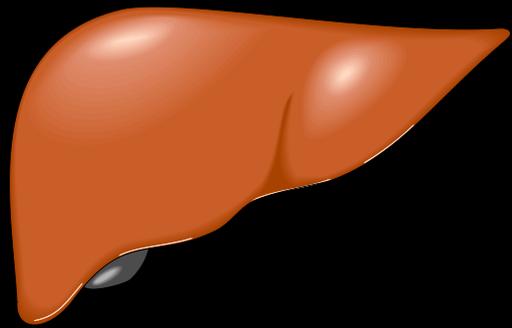
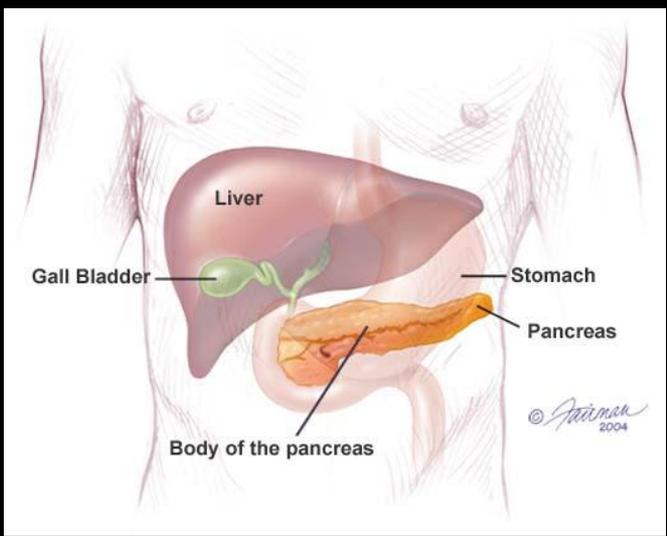
It should also contain water, vitamins, minerals and fibre.

Modern diets and health problems



Controlling Blood Sugar levels

We need glucose in our bodies to help our cells to respire and produce energy. What happens if we have too much glucose?



If blood sugar is too high the pancreas releases insulin

The liver then converts glucose into insoluble glycogen and is removed from the blood

Diabetes

Diabetes is a _____ in which a person's blood sugar (i.e. glucose) level may rise to a _____ level. This is because the _____ doesn't produce enough _____.

Diabetes can be treated by _____ carefully or by injecting extra insulin when needed. Diabetics have to test their blood sugar level before they decide how much insulin to _____ themselves with.

Type 1 diabetes is when the pancreas stops producing insulin altogether. Blood sugar levels have to be controlled by injecting insulin.

Type 2 diabetes is when the pancreas doesn't make enough insulin. This can sometimes be treated by addressing the diet and exercise patterns.

Words - insulin, disease, inject, dangerous, eating, pancreas