**Review of Muscles and Bones and how they relate to the Digestive System**

**Muscle Tissue**

1.Muscle tissue is made of two proteins called \_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_.

2.When a muscle \_\_\_\_\_\_\_\_\_\_ it pulls the attached bones and the joint moves.

3.When muscles contract the muscle cells need \_\_\_\_\_\_\_\_.

4.This energy comes from \_\_\_\_\_\_\_\_\_ we eat.

5.The nutrient molecules that supply energy are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_ .

6.Muscles also require \_\_\_\_\_\_\_\_\_\_\_\_ molecules to build more muscle tissue.

**Bone Tissue**

1.Bone tissue is made of living \_\_\_\_\_ in a network of the mineral \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ .

2.Bone cells need \_\_\_\_\_\_\_\_\_\_ and nutrients so that they can live and grow.

3.This energy comes from \_\_\_\_\_\_\_\_ we eat.

4.The nutrient molecules that supply energy are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_ .

5.Bones require \_\_\_\_\_\_\_\_ like calcium carbonate to build more bone around the cells.

**DIGESTION AND ENZYMES**

“Digestion” means the breaking of large complex nutrient molecules into \_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ molecules.

Only \_\_\_\_\_\_\_\_\_\_\_\_\_ molecules can diffuse, or move into the body \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ where they are used for cellular \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, or for building new tissue.

One way to break down large molecules is to heat them. For example when sucrose is burnt it breaks down to carbon and water.

Human bodies must be kept at around \_\_\_\_\_\_ ºC in order to function properly.

Bodies therefore do not use heat to break down large molecules.

Instead chemicals called ENZYMES work on large molecules and break them into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ molecules.

|  |  |  |  |
| --- | --- | --- | --- |
| Foods containing these nutrient molecules | Large nutrient molecules | Small molecules making up the large molecules | Enzymes that break the large molecules into smaller molecules |
|  | Starch |  |  |
|  | Protein |  |  |
|  | Lipids (fats and oils) |  |  |

**The effect of the enzyme amylase**

**AIM:** To observe the effect of the enzyme called amylase on the large molecule, starch.

**METHOD:**

**Tests to recognise starch and glucose**

**1.Test for starch – put a few drops of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on starch. Iodine turns \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the presence of starch.**

**2.Test for glucose – Add Benedict’s Solution to a sample of glucose and heat very gently.**

**3. Benedict’s Solution turns \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ when heated with glucose.**

1.Place a spatula of starch in a test tube. Add the enzyme amylase. Add Benedict’s Solution and heat very gently for a few minutes.

2.As a CONTROL (comparison): Place a spatula of starch in a test tube. Add Benedict’s Solution and heat very gently for a few minutes.

3.Place a spatula of starch in a test tube. Add the enzyme amylase. Add Iodine solution.

4.Place a spatula of starch in a test tube. Add Iodine solution.

**RESULTS**

Observations

**DATA ANALYSIS**

Explain the effect of amylase on starch.

Where is amylase found in the human body? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Where is starch digested? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Starch is a very large molecule so takes a while to break down completely. The digestion of starch is completed in the duodenum.