

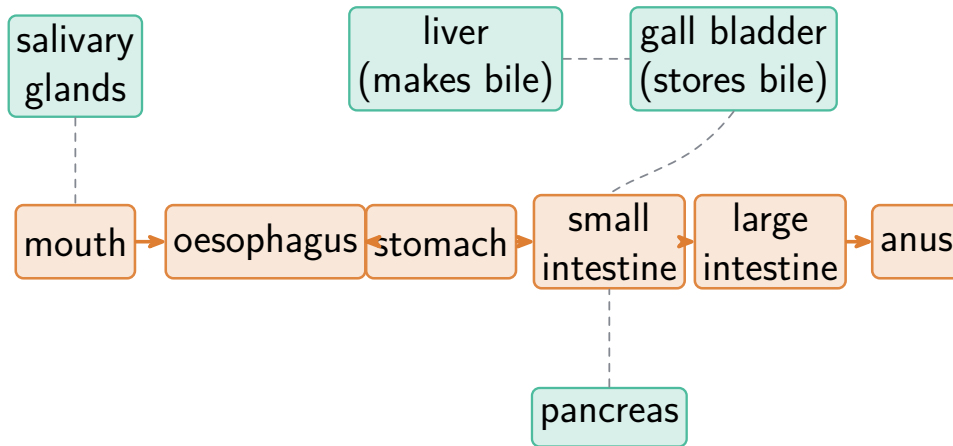
Exercise walk-through

7.4

Chemical digestion

IGCSE Biology

The digestive system



Food travels the **alimentary canal** : mouth →
oesophagus →
stomach → **small**
intestine → **large**
intestine . The **liver** ,
pancreas & glands add
 juices.

The route, end to end

Mouth to stomach Mouth → **oesophagus** → **stomach** , which makes hydrochloric acid as part of the **gastric juice** .

Small intestine The **duodenum** , then the **ileum** : where most digestion finishes and **nutrients** are absorbed.

Large intestine The **colon** takes back water; the **rectum** stores the waste and the **anus** releases it.

At the wall **Maltase** sits on the membranes of the **epithelium** lining the small intestine and breaks maltose into **glucose** right where it is absorbed.

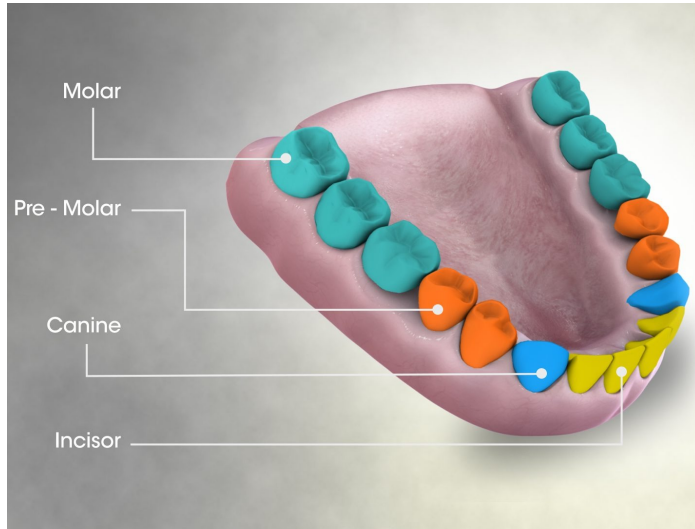
Amylase breaks starch into **reducing sugars** ; the last step happens at the wall, not in the cavity.

Five processes



Take in → break down → into blood → used by cells → waste out. **Egestion** (faeces) is **not** excretion.

Teeth and physical digestion

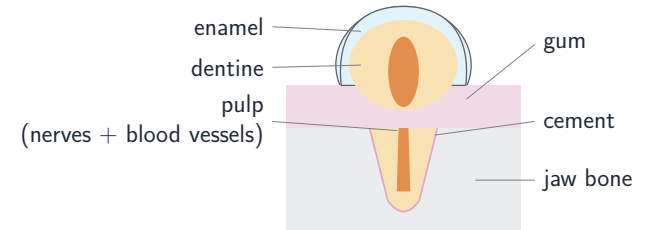


Incisors
enamel
enzymes.

cut, **canines**
over **dentine**

tear, **premolars**
, a soft **pulp**

& **molars** grind. A tooth: hard
. Chewing makes more surface for



The four kinds of tooth, and what a tooth is made of

incisors

chisel-shaped, at the front – **cutting** and biting

canines

pointed – **tearing**

premolars and molars

broad with ridges, at the back – **grinding** and chewing

enamel

the hard white outer layer – the **hardest material in the body**

dentine

a softer, bone-like layer beneath the enamel

pulp and cement

the pulp holds nerves and blood vessels; the cement fixes the root into the jaw

Chewing is **physical** digestion: it does not change any molecule, it only increases the **surface area** for the enzymes to act on.

Exercises 2.1·2.2

2.1 State the products formed when lipase digests fat. [2]

2.2 Name the enzyme that digests protein. [1]

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2.1 State the products formed when lipase digests fat. [2]

2.1

- lipase digests fat into **fatty acids** and **glycerol**
-

2.2 Name the enzyme that digests protein. [1]

2.2

- the enzyme that digests protein is **protease**

Exercise 3.1

3.1 Amylase digests starch into:

[1]

☐

A amino acids

B reducing sugars

C fatty acids

D glycerol

Exercise 3.1

3.1 Amylase digests starch into:

[1]

☐

A amino acids

B reducing sugars

C fatty acids

D glycerol

3.1 B

- amylase digests starch into **reducing sugars**
- A is protease; C and D are lipase products

Exercise 3.2 (a)

3.2 The stomach produces hydrochloric acid.

(a) State two functions of this acid.

[2]

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3.2 The stomach produces hydrochloric acid.

(a) State two functions of this acid.

[2]

(a)

- it **kills harmful microorganisms**
- it gives an **acidic pH** suited to the stomach's protease

Exercise 3.2 (b)

3.2 The stomach produces hydrochloric acid.

(b) Name the protease that works in the acidic stomach.

[1]

Exercise 3.2 (b)

3.2 The stomach produces hydrochloric acid.

(b) Name the protease that works in the acidic stomach.

[1]

(b)

- the stomach protease is **pepsin**

Exercise 3.3

3.3 Explain why food molecules must be made small and soluble before they can be used. [2]

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3.3

- large molecules are **insoluble** and cannot be absorbed
- small soluble molecules can **pass into the blood**