Biology A · Unit 2 · Level 2 (modified)

Algae & Photosynthesis



TODAY'S PLAN

- 🌿 Algae + microscopes
- ☀️ Photosynthesis equation
- 🟢 Two stages
- 🍃 Stomata
- 🧪 BTB experiments

Review · 5 minutes

Quick Review



🐋 In the orca unit, **phytoplankton** were the producers at the base of the food web.

🌿 Phytoplankton are **algae**.

❓ What do producers need to make food?

Words to Know

Words to Know



Algae

Plant-like living things in water. They do photosynthesis.



Photosynthesis

Plants and algae use light, water, and carbon dioxide to make glucose and oxygen.



Carbon dioxide

CO2. A gas plants take in to make sugar.



Oxygen

O2. A gas plants give off. Animals need it.

Words to Know

More Words to Know



🍬 **Glucose**: The sugar made by photosynthesis. Stores chemical energy.

🟢 **Chloroplast**: The part of a plant cell where photosynthesis happens. Has green chlorophyll.

🍃 **Stomata**: Tiny pores on leaves. Let CO2 in and oxygen and water vapor out.

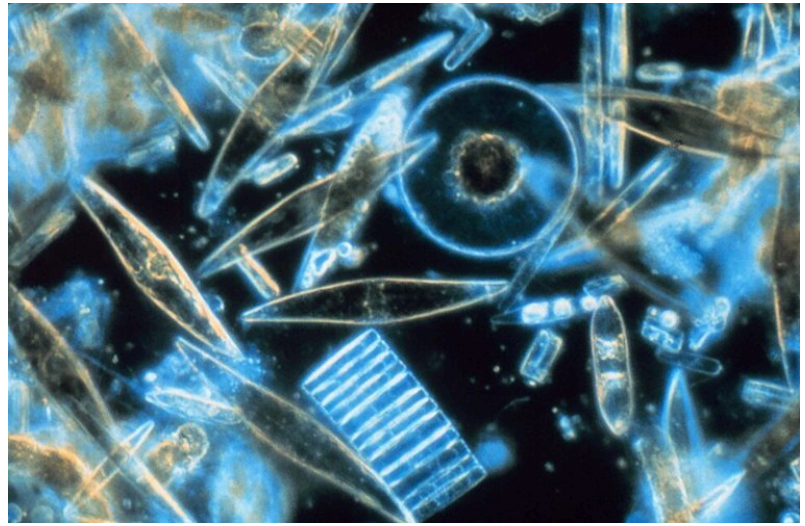
🔬 **Microscope**: Total magnification = eyepiece (10x) × objective (4x, 10x, 40x).

Learn

A Look at Algae

🌿 **Algae**: seaweed (kelp), pond scum, phytoplankton.

🔬 Microscope care: lens paper only; find things on **low power** first; no coarse knob on high power.



Learn

Total Magnification



Low (4x)

4 × 10 = 40x



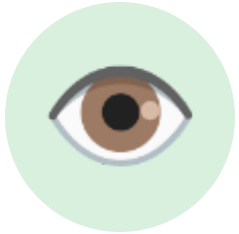
Medium (10x)

10 × 10 = 100x



High (40x)

40 × 10 = 400x



Eyepiece

always 10x

🃏 Check 1 of 3



The 40x objective with a 10x eyepiece gives…

Hold up 1, 2, or 3:

1️⃣ 50x

2️⃣ 400x

3️⃣ 40x



400x

Multiply: 40 × 10 = 400.

Learn

Photosynthesis



☀️ **Light energy** → stored **chemical energy** (glucose).

💨 carbon dioxide + 💧 water + ☀️ light → 🍬 glucose + 🫧 oxygen

🟢 Happens in the **chloroplasts** of plants and algae.

Compare

Inputs and Outputs



Inputs

⬅️

☀️ Light (energy)
💨 Carbon dioxide
💧 Water

Outputs

➡️

🍬 Glucose (stored energy)
🫧 Oxygen

🃏 Check 2 of 3



Which is an OUTPUT of photosynthesis?

Hold up 1, 2, or 3:

1️⃣ Carbon dioxide

2️⃣ Light

3️⃣ Oxygen

✅ Answer · Card 2 of 3

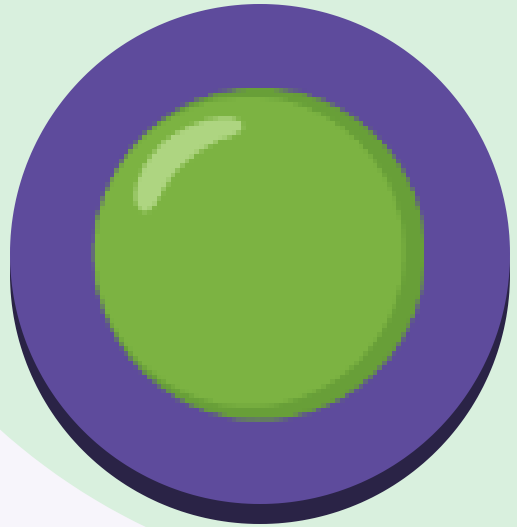


Oxygen

Oxygen and glucose come out.

Compare

Two Stages (Pop Beads)



Light reactions

☀️

In the thylakoids
Light splits water
Oxygen is released

Calvin cycle

🔄

In the stroma
CO_2 + hydrogen → glucose

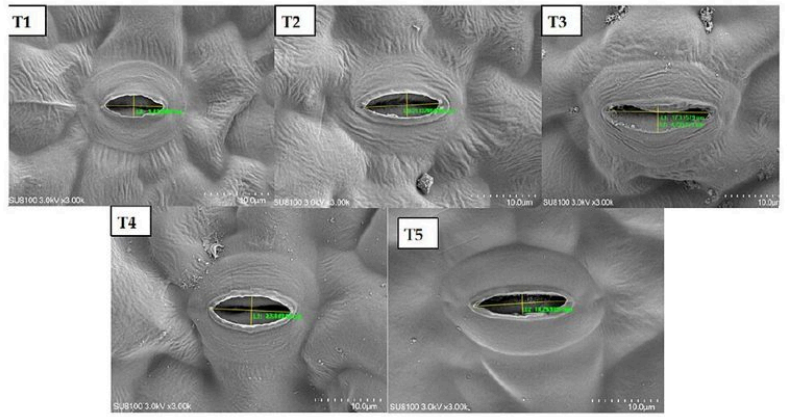
Learn

Stomata

🌿 **Stomata**: tiny pores, mostly on the **underside** of leaves.

🚪 **Guard cells** open and close them.

🌵 They close in hot, dry weather to save water.



🃏 Check 3 of 3



Guard cells…

Hold up 1, 2, or 3:

1️⃣ Open and close the stomata

2️⃣ Make glucose

3️⃣ Absorb water from roots

✅ Answer · Card 3 of 3



Open and close the stomata

They control gas exchange and water loss.

Learn

BTB Shows CO2



🔵 **Blue** = less CO2 (plants used it up). 🟡 **Yellow** = more CO2.

🐌 Snails (respiration) make CO2. 🌿 Elodea in light (photosynthesis) uses CO2.

🌱 Fertilizer helps algae grow; 🧼 dish soap does not.

Wrap-Up

Recap



Photosynthesis
light → glucose



Inputs
CO2 + water + light



Outputs
glucose + oxygen



Stomata
gas exchange

Wrap-Up

Exit Ticket



1️⃣ Write the word equation for photosynthesis.

2️⃣ Where in the cell does it happen?

3️⃣ What does BTB turning yellow tell you?