What Is Photosynthesis: How Plants Make Food - EuroSchoolPhotosynthesis is the fundamental process by which plants, algae, and some bacteria convert light energy into chemical energy to create their own food (sugars) and release oxygen as a byproduct. Using sunlight, water, and carbon dioxide, this process fuels life on Earth by producing the organic matter and oxygen necessary for most living organisms.

The Process

Inputs: Plants take in water through their roots and absorb carbon dioxide from the air through tiny pores called stomata on their leaves.

Light-Dependent Reactions: In the chloroplasts, the energy from sunlight is captured by chlorophyll and used to convert water into ATP and NADPH.

Light-Independent Reactions (Calvin Cycle): ATP and NADPH are then used to convert carbon dioxide into glucose (a sugar) and other organic molecules.

Outputs: Oxygen is released into the atmosphere as a waste product, and the glucose provides energy and building blocks for the plant.

Significance

Energy Production

: Photosynthesis is the ultimate source of metabolic energy for nearly all living systems, providing the food we eat, either directly or indirectly.

Oxygen Production

: It is responsible for the continuous release of molecular oxygen into the Earth's atmosphere, which is essential for the respiration of animals and plants.

Carbon Cycle

: Photosynthetic organisms remove vast amounts of carbon dioxide from the atmosphere, helping to regulate its levels and mitigate climate change.