

Energy flow

Organisms are divided into two groups according to their energy source:

Autotrophs – organisms that obtain inorganic nutrients from the abiotic environment and synthesise their own organic molecules (food) from simple inorganic ones.

- Also called **producers**, e.g. oak trees, algae, blue-green bacteria.
- All food chains start with a producer.
- The producers make organic matter by photosynthesis.

Heterotrophs – organisms that obtain organic molecules (food) from other organisms. There are three types of heterotroph: **consumers**, **detritivores** and **saprotrophs**.

- **Consumers** – ingest organic matter that is living or recently killed; primary consumers eat producers; secondary consumers eat primary consumers; tertiary consumers eat secondary consumers. Energy losses occur from consumers at each stage of the food chain.
- **Detritivores** – ingest and digest dead organic matter, e.g. dung beetles and earthworms.
- **Saprotrophs** – live on or in dead organic matter, secreting digestive enzymes onto it and absorbing the products of digestion.

Light is the initial energy source in a food chain but is ultimately lost as heat after flowing through a food chain.