

Light

Biology

Mr. Seegers Notes3

- behaves as both a wave and a particle. Particles of light energy called photons can be absorbed by pigments of plants (Chlorophyll)

Photosynthesis

Plants, algae, and cyanobacteria are producers

- they obtain energy directly from the sun
- more than 200 billion tons of organic material is produced by photosynthetic organisms
- consumer organisms indirectly depend on Photosynthesis to survive

Photosynthesis depends on visible light rather than other wavelengths of radiation. (Figure 9-2 pg 169)

Chlorophyll

- pigment that absorbs light
- first step in the conversion of light energy to chemical energy

pigment – any substance that absorbs light

Why are leaves of plants green? (Figure 9-4 pg 171)

Besides chlorophyll, plants have other photosynthetic pigments

Carotenoids- absorbs yellow/orange wavelengths of light that chlorophyll does not absorb.

Plants use light energy to make carbohydrates

- Carbon Dioxide + Water -----→ Glucose + Oxygen + Water
- which is then used by the plant as and energy source

Cell Division

Prokaryotic

- cells that DO NOT have membrane bound organelles such as a nucleus
- species include (bacteria and algae)
- undergo mitosis for replication

Eukaryotic

- each body cell contains a characteristic number of chromosomes dependant on the species. (Ex. Humans have 46 chromosomes or 23 pairs)
- species include more complex animals and plants

All complex organisms begin life as a single cell, the fertilized egg

- In most multicellular organisms, the fertilized egg or cell divide to form two cells and each new cell divides again and again eventually forming the complex tissues, organs and systems of that organism.

- those cells that form body structures are called **somatic cells**

Ex – nerve cells, muscle, blood cells, roots cells in plants etc.

-throughout this cell division process the original number of chromosomes are kept constant. How does this happen?

Mitosis- the process in which a somatic cell duplicates chromosomes and divide into two identical cells.

A different process is required to ensure that chromosome number is maintained in offspring produced by sexual reproduction.

Sexual Reproduction

-the fusion of two gametes (sex cells). This process creates a zygote or fertilized egg

- since a normal human requires 46 chromosomes to survive the gametes have to reduce their number of chromosomes in half to 23. This process is called **Meiosis**.

Meiosis ensures that a sperm and egg can fuse to create a normal individual that has 46 chromosomes, same as the parents. 23 chromosomes from the mother and 23 from the father.