Learning Roadmap

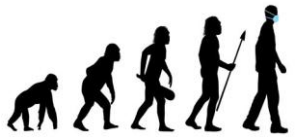
KS4 Biology

Stevenage Education Support Centre

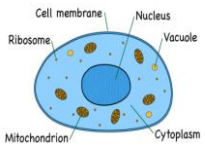
'A centre of excellence for inspiring successful futures'

VALUES:

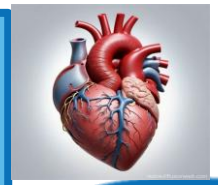
Kindness, Teamwork, Resilience, High Aspirations, Tolerance, Citizenship

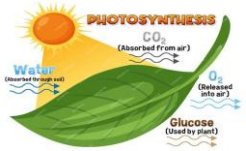


1. CELLS
This topic explores the structure of eukaryotic ad prokaryotic cells. It looks at stem cells and specialised cells . The topic also goes on to explore how different cells divide and how substances are transferred in and out of cells.

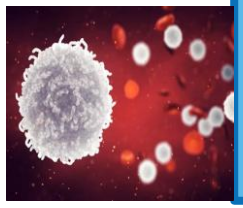


2. ORGANISATION
This topic starts by exploring how organisms are structured. It discusses different organ systems such as the digestive system and how enzymes play a part in digestion. It also looks at the heart, lungs and the circulatory system. The topic finishes by exploring cardiovascular disease and cancer.



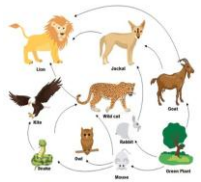


3. INFECTION AND RESPONSE
This topic starts by looking at different types of pathogen. It then explores examples of communicable diseases caused by these pathogens. In plants and animals. The topic also explores how our immune system fights off these pathogens, how vaccines work and how drugs are developed.



4. BIOENERGETICS
This topic starts by looking at the photosynthesis process. This includes a practical to explore the effect of light on the rate of photosynthesis. The topic then moves onto aerobic cell respiration and anaerobic cell respiration . It finishes by looking at the effect of exercise on cell respiration.

5. HOMEOSTASIS AND RESPONSE
This topic starts by explaining what homeostasis is. It then explores how homeostasis is maintained by both the nervous system and the endocrine system. It zooms in on some examples such as body temperature control , blood glucose control and water and ion balance. The topic finishes by looking at puberty and the menstrual cycle.

6. INHERITANCE, VARIATION AND EVOLUTION.
This is a wide topic that explains what DNA is , how we inherit characteristics and genetic diseases, as well as explaining how variation within species and between species, is possible. The topic goes on to explore evolution, what drives evolution and the evidence for this. It finishes by looking at selective breeding and genetic engineering.

7. ECOLOGY
This topic explores what an ecosystem is and how it works. It looks at how different species interact with each other and their environment. It looks at food chains, food webs , trophic levels. and pyramids of biomass. It also explores why biodiversity is so important and why different ecosystems are affected by climate change.