

# Co op Academy Walkden Biology Learning Journey

College – A level Biology

College – BTEC level 2 or 3 in a related subject e.g. health & social care

College – BTEC level 3 in applied human biology

## Biodiversity

- Discuss the importance of biodiversity.
- Explain the impact of human activities on biodiversity and these effects can be reduced.



## Next Steps

**Apprenticeship** – Health science, Life science, food science & environmental science.

## Variation and Evolution

- Explain how natural selection may lead to evolution.
- Evaluate the use of selective breeding.
- Explain how cloning and adult cell cloning can be used to make identical copies of an organism.
- Explain how genetic modification works and discuss the ethical considerations associated with its use.

## Genetics and Evolution

Explain how fossils are formed and evaluate their use as evidence for evolution. Explain how bacteria have become resistant to antibiotics and discuss the implications of this.



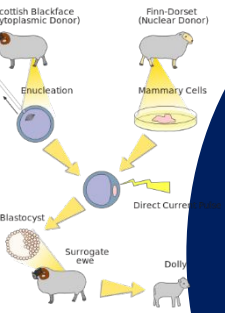
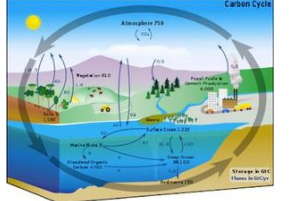
## Adaptations, interdependence & Competition

Explain how a variety of plants and organisms have adapted to survive in extreme conditions. Explain how organisms in an ecosystem are interdependent. Discuss the effects of competition on population numbers.



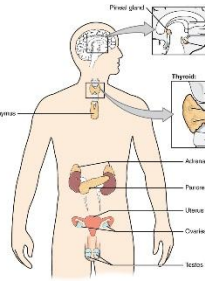
## Organising an ecosystem

Explain how different materials are recycled through an ecosystem. Represent feeding relationships using food chains, food webs and pyramids of numbers, biomass and energy.



## Hormonal Control

Describe the structure and function of the endocrine system. Compare and contrast type I and type II diabetes. Explain how hormones are involved in controlling fertility.



## Respiration

Use equations to represent respiration reactions (aerobic and anaerobic) and explain the role of the liver in metabolism. Evaluate the positive effects of exercise.



## Photosynthesis

Investigate and explain the limiting factors of photosynthesis and explain how these can be manipulated to increase plant growth. Explain how plants use glucose.



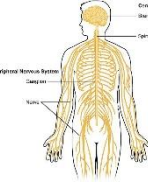
## Reproduction

- Evaluate the advantages and disadvantages of sexual and asexual reproduction.
- Compare and contrast mitosis and meiosis.
- Explain the mechanisms of inheritance and express probabilities using percentages and ratios.

Year 11

## Nervous System

Describe the structure and function of the human nervous system



## Non Communicable Diseases

Evaluate the effects of lifestyle and genes as risk factors for non communicable diseases.



## Organisation and the Digestive System

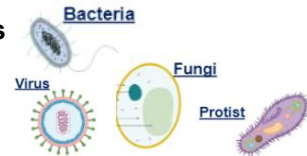
Explain the roles of the stomach, pancreas and gall bladder in digestion and Explain how specific enzymes are involved in the breakdown of food molecules.

Investigate the types of molecules in food and the effect of temperature on the enzyme amylase.



## Communicable Diseases

Explain how viruses, bacteria, fungi and protists cause disease.

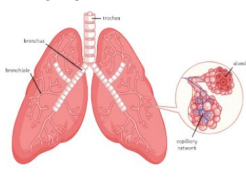


## Organising Animals and Plants

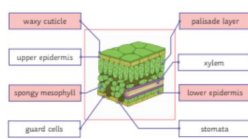
Explain in detail the structure of the heart and how the heart works.



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Explain how the specialised cells of a plant are adapted for their functions



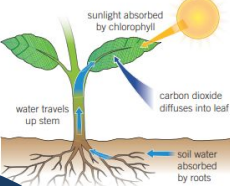
## Preventing and Treating Disease

Explain the role of vaccination, antibiotics, and other drugs in preventing and treating diseases.



## Ecosystems part 2b Photosynthesis

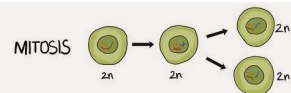
- Explain the process of photosynthesis and investigate the factors affecting the rate of photosynthesis.
- Explain how the structure of the leaf enables photosynthesis.



Year 10

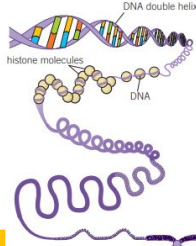
## Cell Division

Explain how cells divide by mitosis and evaluate the use of stem cells.



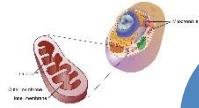
## Genes part 2b Inheritance

Explain how characteristics are passed from parents to offspring and explain the structure and function of DNA.



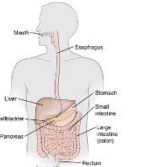
## Ecosystems part 2a Respiration

Explain the processes of aerobic and anaerobic respiration and compare the similarities and differences between respiration in humans and other organisms.



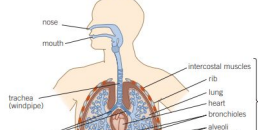
## Organisms part 2b The Digestive System

Label the digestive system and explain the function of the digestive system organs. Explain what is a balanced diet and why we need different nutrients in our diet.



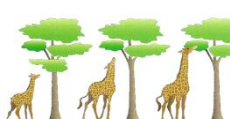
## Organisms part 2a Breathing

Explain how gases are exchanged during breathing and explain the role of muscles in breathing.



## Genes part 2a Natural Selection

Explain how evolution of organisms has occurred over time due to natural selection and explain why some organisms have become extinct.

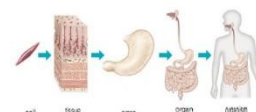


## Organisms part 1

Explain how the skeleton, muscles, joints and ligament help us to move.



Explain how different tissues work together to form an organism.



## Evolution and Inheritance

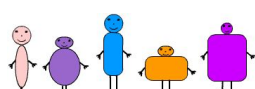
- Identify how plants and animals are suited to their environment.
- Recognise that living things produce offspring that are similar but not identical to their parents.
- Recognise that living things have changed over time.



Year 8

## Genes part 1b Variation

Explain the differences between inherited and environmental variation and continuous and discontinuous variation.



## Genes part 1a Human Reproduction

Explain how humans reproduce and describe the structure and function of the organs involved in reproduction.



Year 7

## Animals, including humans

Identify and describe the functions of the main parts of the human circulatory system.



## Living things and their habitats:

Describe the differences in the life cycles of plants and animals.



Primary School

## Ecosystems part 1

- Interpret and construct food chains and webs and explain the effects of changes to an ecosystem.
- Identify and describe parts of a flower and explain how plants reproduce.

