



# Year 11 Combined Science - Biology Learning Journey Map

## Homeostasis and response – Working scientifically:

- Evaluate information around the relationship between obesity and diabetes, and make recommendations taking into account social and ethical issues.
- Show why issues around contraception cannot be answered by science alone.
- Explain everyday and technological applications of science; evaluate associated personal, social, economic and environmental implications; and make decisions based on the evaluation of evidence and arguments.
- Developments of microscopy techniques have enabled IVF treatments to develop.
- Understand social and ethical issues associated with IVF treatments.
- Evaluate from the perspective of patients and doctors the methods of treating infertility.
- Interpret and explain simple diagrams of negative feedback control.

## Homeostasis and response - Maths Skills:

- Construct and interpret frequency tables and diagrams, bar charts and histograms
- Translate information between graphical and numeric form

Revision & Re-teach

YEAR 12

Feedback systems p.67

The use of hormones to treat infertility p.66

HOMEOSTASIS & RESPONSE PART 2

Human endocrine system p.62

Hormones in human reproduction p.64

Contraception p.65

Classification p.81

Resistant Bacteria p.78

Fossils and extinction p.79

Speciation p.76

Genetic inheritance and work of Mendel p.72-73

Variation p.75

Theory of evolution and evidence for evolution p.76

## Inheritance - Maths Skills:

- Students should be able to carry out a genetic cross to show sex inheritance.
- understand the concept of probability in predicting the results of a single gene cross and complete a Punnett square diagram and extract and interpret information from genetic crosses and family trees
- Students should understand and use direct proportion and simple ratios in genetic crosses.
- (HT only) Students should be able to construct a genetic cross by Punnett square diagram and use it to make predictions using the theory of probability.

Inherited disorders and sex determination p.71, 74

Selective Breeding p.77

Genetic Engineering p.78

## Variation and Evolution - Maths Skills:

- extract and interpret information from charts, graphs and tables
- Be able to interpret diagrams such as evolutionary trees.

DNA and the genome p.68

Asexual and sexual Reproduction p.69, 71

YEAR 10

Protein Synthesis p.68

DNA Structure p.68

Meiosis p.70

INHERITANCE, VARIATION AND EVOLUTION

## Variation and Evolution - Working Scientifically:

- Use the theory of evolution by natural selection in an explanation.
- Explain the benefits and risks of selective breeding given appropriate information and consider related ethical issues.
- Explain the potential benefits and risks of genetic engineering in agriculture and in medicine and that some people have objections
- HT Only: Interpret information about genetic engineering techniques and to make informed judgements about issues concerning cloning and genetic engineering, including GM crops.
- Explain the potential benefits and risks of cloning in agriculture and in medicine and that some people have ethical objections.
- appreciate that the theory of evolution by natural selection developed over time and from information gathered by many scientists.
- The theory of genetics and speciation has developed over time. Data is now available to support the theory of evolution.
- Appreciate why the fossil record is incomplete and interpret fossil records
- Understand how scientific methods and theories develop over time.
- Interpret evolutionary trees.

## Inheritance - Working Scientifically:

- Modelling behaviour of chromosomes during meiosis.
- Historical developments of our understanding of the causes and prevention of malaria.
- discuss the importance of understanding the human genome.
- Interpret a diagram of DNA structure but will not be required to reproduce it.
- Modelling insertions and deletions in chromosomes to illustrate mutations.