

# EVOLUTION

## Variation

- 1 Be able to relate adaptations of species that allow them to survive in the conditions where they normally live.
- 2 Know that variation can be due to hereditary or environmental factors or a combination of both and be able to describe simple examples of each.
- 3 Know what happens to genetic material during mitosis for growth.
- 4 Know what happens to genetic material during meiosis to produce gametes.
- 5 Know that gametes are cells that contain half the usual amount of genetic information (haploid).
- 6 Know that individuals inherit characteristics from both parents.
- 7 Know that asexual reproduction produces offspring identical to the previous generation (clones).
- 8 Know how plants can be cloned using cuttings and micropropagation.
- 9 Understand that sexual reproduction encourages variation in the gene pool.
- 10 Know that ionising radiation may increase the probability of genetic mutation. [SIB]
- 11 Know that genetic mutations are a source of genetic variation.[SIB]

## Evolution

- 1 Understand how the fossil record gives evidence of evolution
- 2 Understand that evolution involves gradual changes over long periods of time.
- 3 Understand how variation in a gene pool improves the prospects of adaptation and survival of a species.
- 4 Understand how natural selection may lead to the spread of an allele through a population and to adaptation of species.
- 5 Understand the relationship between natural selection and changes in the environment in which a species lives.
- 6 Understand that changes in the environment can lead to extinction of species.

## **Inheritance**

- 1 Know that the way living cells work is determined by information inherited from the parents and is carried in the nucleus.
- 2 Know that genetic information is carried in a code in chromosomes.
- 3 Know that each chromosome consists of many alleles (genes), each of which helps to control a characteristic.
- 4 Understand the meaning of dominant and recessive.
- 5 Be able to make simple diagrams to show the pattern of a single monohybrid cross.
- 6 Know how gender is determined in humans.
- 7 Know that some conditions (haemophilia or colour blindness) are sex-linked.
- 8 Understand the pattern of inheritance of sex-linked conditions.
- 9 Understand how a single selective breeding can produce individuals with a desired characteristic.
- 10 Understand that an extended programme of selective breeding is needed to establish a genetically stable breeding pool.

## **Genetic Engineering**

- 1 Know that the genetic material is a polymer called DNA.
- 2 Understand that each gene is composed of a section of DNA.
- 3 Be able to describe genetic engineering as the removal of genes from the DNA of one organism and the insertion into the DNA of another organism.
- 4 Know the use of bacterial plasmids in genetic engineering.
- 5 Know some potential advantages and dangers of genetic engineering.