Properties of Cells

Cells are complex and highly organized

They contain numerous internal structures

Some are membrane bound (organelles) while others do not

Cells contain a genetic blueprint and machinery to use it

Genes are instructions for cells to create specific proteins

All cells use the same types of information

The genetic code is universal

The machinery used for synthesis is interchangeable

However, for this to function properly, information transfer must be error free

Errors are called mutations

Cells arise from the division of other cells

Daughter cells inherit the genes from the mother cells

Binary fission - cell division in bacteria

Mitosis - the genetic complement of each daughter cell is identical to the other and to the mother cell. This is asexual reproduction

Meiosis - the genetic complement of each daughter cell is reduced by half and each daughter cell is genetically unique. This is used in sexual reproduction

Daughter cells inherit cytoplasm and organelles from the mother cells

Asexual - organelles from mother cell

Sexual - organelles predominately from one parent

In eukaryotes, the chloroplasts and mitochondria come from the egg cell

This can be used to trace the evolutionary origin of the organism