

WJEC (England) Biology A-level

Topic 2.2: Genetic information is copied and passed onto daughter cells

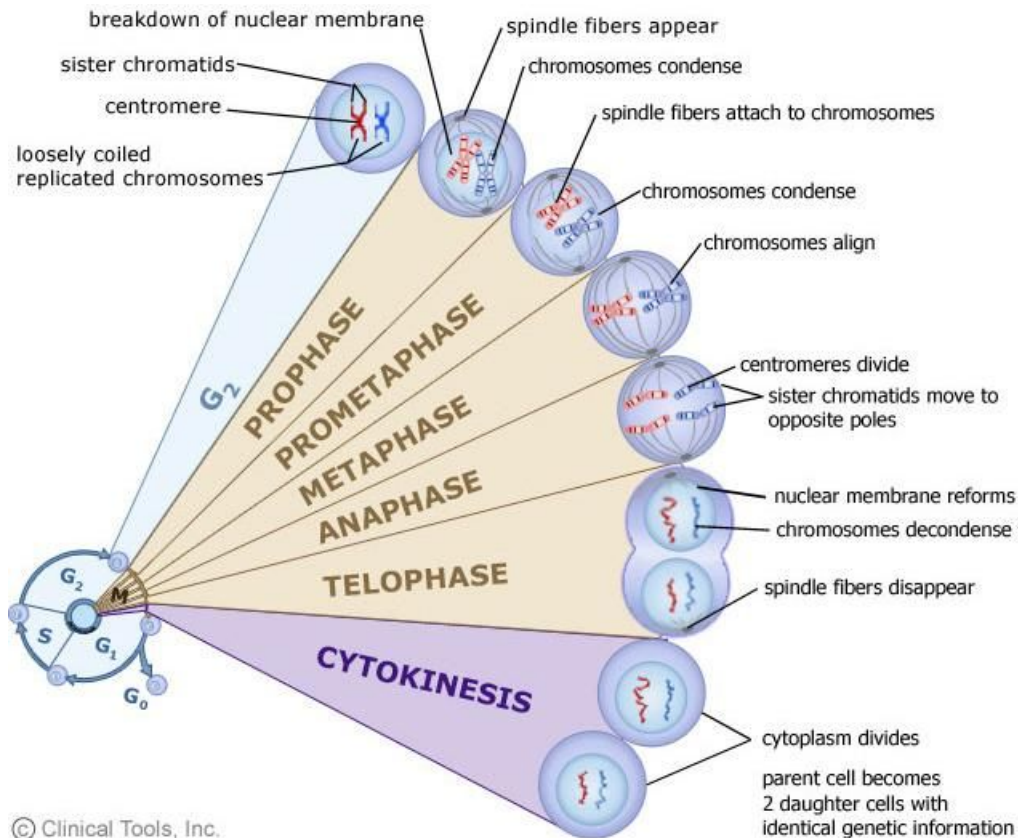
Notes



The role of **mitosis and the cell cycle** is to produce **identical daughter cells for growth and asexual reproduction** of cells. All the cells produced by mitosis are **genetically identical** therefore **mitosis does not give rise to genetic variation**.

During the cell cycle, a cell it forms, it grows and then divides to form daughter cells. There are three stages of the cell cycle:

- **Mitosis** – mitosis is a form of cell division that produces identical cells, there are four stages of mitosis: **prophase, metaphase, anaphase and telophase**.



- **Cytokinesis** – during cytokinesis the parent and replicated organelles move to opposite sides of the cell and the **cytoplasm divides** thus producing two daughter cells.
- **Interphase** – during this stage the cell **grows and then prepares to divide** – chromosomes and some organelles are replicated, chromosomes also begin to condense.

Meiosis is a form of cell division that gives rise to **genetic variation**. The main role of meiosis is **production of haploid gametes** as cells produced by meiosis have half the number of chromosomes. Meiosis produces genetically different cells, genetic variation is achieved through:

- **Crossing over of chromatids** where pairs of chromosomes line up and exchange some of their genetic material.



- Independent assortment of chromosomes** – there are various combinations of chromosome arrangement.

