

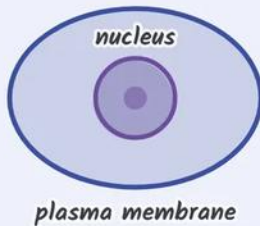
Life Processes in Living Organisms Part 1

cell division, and the respiration that pays for everything a cell does



Why cells divide *

- cells divide for growth, for repair and replacement of worn out cells, and for reproduction
- the cell cycle is the whole sequence: interphase, when the cell grows and copies its DNA, then the division itself
- interphase is much the longer part, and it is when the chromosomes are duplicated, though they are not yet visible as separate bodies
- there are two kinds of division: mitosis and meiosis
- mitosis keeps the chromosome number the same, and meiosis halves it
- the two happen in different places: mitosis in body cells and meiosis only in cells that will form gametes



a cell with its nucleus drawn at the centre: the DNA inside is copied during interphase, so that when division comes there is a complete set for each of the daughter cells

Mitosis against meiosis

Mitosis

- one division, giving 2 daughter cells
- chromosome number stays the same, diploid to diploid
- daughter cells are genetically identical to the parent
- occurs in body cells, for growth and repair
- no crossing over, so no new combinations

Meiosis

- two divisions, giving 4 daughter cells
- chromosome number is halved, diploid to haploid
- daughter cells are genetically different from each other
- occurs only in reproductive cells, forming gametes
- crossing over occurs, which is a major source of variation

the halving in meiosis is what keeps the species chromosome number constant: two haploid gametes fusing restore the diploid number, and without it the count would double every generation

