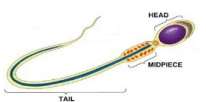
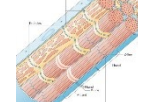
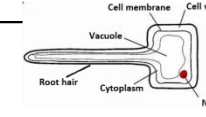
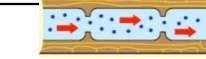
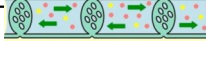


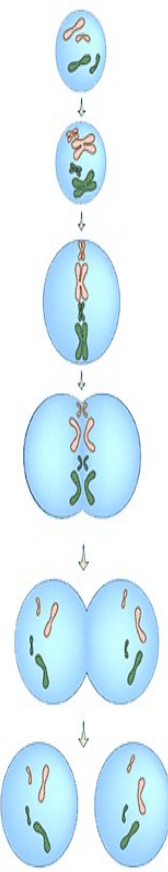
Topic: B1 B Cell Division

Key word	Definition
Mitosis	A type of cell division that produces two identical daughter cells for growth and repair.
Chromosome	A thread-like structure made of DNA , found in the nucleus, which carries genes .
Cell cycle	The sequence of events in a cell's life, including growth , DNA replication , and mitosis .
Differentiation	The process by which a cell becomes specialised to carry out a particular function.
Cell Specialisation	When cells develop specific features to perform a particular job, such as nerve or muscle cells.
Stem Cell	An undifferentiated cell that can divide to form specialised cells .
Embryonic Stem Cell	A stem cell taken from an early-stage embryo that can develop into any type of body cell .
Therapeutic cloning	A technique where an embryo is made to have the same genes as a patient , so stem cells can be used to treat diseases without rejection.
Asexual	Reproduction involving only

Specialised Cell	Diagram	Function	Adaptations
Sperm cell		Transport the male DNA to the female DNA.	Long tail – to swim towards the egg. Lots of mitochondria – for energy. Enzymes in head (acrosome) – to digest egg cell membrane.
Nerve cell		To carry electrical signals from one part of the body to another.	Long – to cover distance. Branched connections – to connect to other nerve cells.
Muscle cell		To contract quickly.	Long – so that they have space to contract. Lots of mitochondria – to generate energy for the contraction.
Root hair cells		To absorb mineral ions and water from the soil.	Long hairs – to suck into soil. Large surface area – to absorb more water and mineral ions.
Xylem cells		To transport water in plants.	Hollow in the centre – to allow water to flow through.
Phloem cells		To transport food in plants.	Very few subcellular structures – to allow food to pass through.
- In most animal cells, that ability to differentiate is lost at an early stage. Lots of plant cells do not ever lose this ability. - The cells that differentiate in mature animals are mainly used for repair and replacing cells (e.g. skin or blood cells). - BODY CELLS have two sets of chromosomes (23 pairs/ 46 total). SEX CELLS (gametes) have one set of chromosomes in humans (23 total)			

<u>For</u>	<u>Use of Stem cells</u>	<u>Against</u>
Stem cells from bone marrow can replace faulty blood cells.	Stem cells grown in the lab could become contaminate with a virus and infect the patient.	
Embryonic stem cells could replaces faulty cells in sick people (e.g. insulin-producing, nerve cells).	Embryonic stem cells shouldn't be used as each embryo is a potential human life.	
Therapeutic cloning – embryo could be made to have the same genetic information as the patient (wouldn't be rejected).	Embryos are usually from fertility clinics (aborted embryos).	

Mitosis- cell division for growth and repair of cells (produces clones)



1. Parent cell
2. Chromosomes make **identical copies** of themselves (**replicate**) and the amount of ribosomes and mitochondria increase.
3. The chromosomes **line up** along the **centre**.
4. One set of chromosomes is pulled to each end of the cell and the nucleus divides.
5. Two **daughter cells** start to form.
6. Two **new daughter cells** with **identical chromosomes** to the **parent cell**.