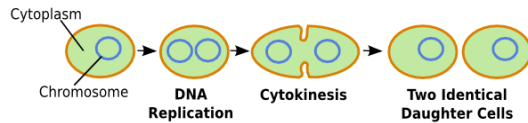


Binary fission

This is the process where **prokaryotic** cells replicate.



The **circular DNA** replicate, the cell **increases in size** while the circular DNA move to **opposite poles** of the cell. Then the **cytoplasm** begins to divide and new **cell wall** starts to form. **2** daughter cells are produced which have **1** copy of the **circular DNA** and a **variable number** of **plasmids**.

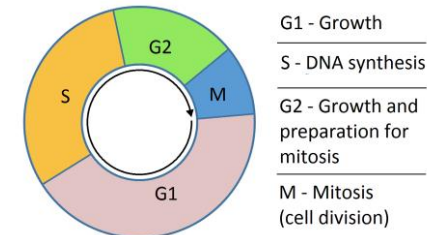
Bacteria divide **super fast** when in their **optimum** conditions. But if their conditions become **unfavourable** then the cells will **stop dividing** and eventually **die**.

Chromosomes

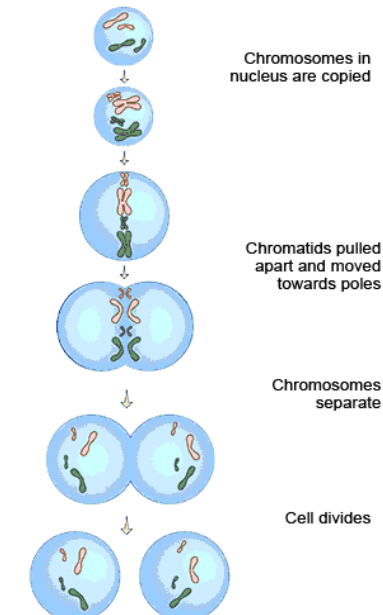
They contain **genetic material** and are found within the **nucleus**. They are **coiled up** lengths of **DNA molecules**. Each of them carries a number of **genes** which will control the **development** of different **characteristics**. Body cells have **2** copies of each chromosome – 1 from the **mother** and 1 from the **father**.

The cell cycle

This cycle makes **new cells** for **growth, development and repair** from body cells that divide to produce new cells as part of the stages within the cycle.



When the cell divides its called **mitosis**, this is used to grow or replace cells that have been **damaged**. At the end of the cycle the results are **2 new cells** that are **identical** to the original cell with the **same number of chromosomes**.



Preview from Notesale.co.uk
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Culturing microorganisms

To **grow** bacteria in a lab will grow on **agar plates** which will display visible colonies on the surface. To make this plate you will need to pour **hot** agar jelly into a **shallow Petri dish** and leave to **cool**. Once it has set, using and **inoculating loop** you can **transfer** microorganisms to the **culture medium** (agar plate) then a **spreader** can be used to get an **even covering** of bacteria. Then the bacteria will **multiply**. Within schools culture mediums cannot go **above 25°C**. This is because **harmful pathogens** may grow. To ensure that your results are exact you need to **sterilise** all your **apparatus** including your **hands** to make sure no **unwanted bacteria contaminate** your test.

Once your

microorganisms have grown you can calculate the size of the **inhibition zones** to compare the **effectiveness** of **antibiotics** or you can calculate the **area** of the **colonies** themselves using:
Area = πr^2

Mitosis

When everything has been copied the cell can carry out **mitosis**. The chromosomes **line up** in the **middle** of the cell and allow **cell fibres** to pull them apart so that the **2** arms of each chromosome go to **opposite** ends of the cell. **Membranes** form around the sets of **chromosomes** creating the **nuclei** of the new cells. Then the **cytoplasm** and **cell membrane** divide. The **2 new daughter** cells contain **exactly** the same DNA as each other and the mother cell.

Growth and replication

In a cell the **DNA** is spread out in **long strings**. Before it divides the cell **increases** its amount of **sub cellular structures** and then duplicates its DNA so that there is **1** copy for each new cell. The copied DNA forms **x-shaped** chromosomes and each arm is an **exact duplicate** of the other.