

## Growing and investigating bacteria, Changing pathogens

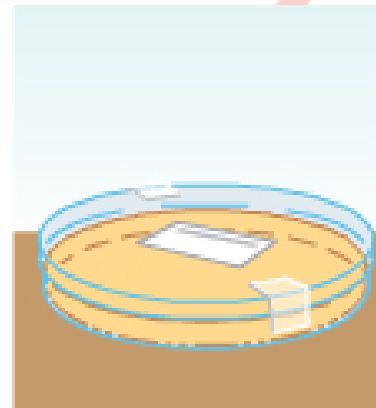
- Pure cultures of non-pathogenic (safe) bacteria can be used for laboratory investigations.
- A culture of microorganisms can be used to find the effect of antibiotics on bacteria.
- Cultures need to be uncontaminated to protect everyone. If not other bacteria could grow, including pathogens.
- To culture microorganisms, they need a culture medium called agar jelly. This contains the nutrients needed for growth.
- They should be incubated at 25°C in school labs and 35°C in industry. They also need oxygen.
- To keep the culture pure you must pass metal loops through a flame, boil solutions and agar. Also prevent microorganisms getting in from the air.



Sterilise the inoculating loop used to transfer microorganisms to the agar by heating it until it is red hot in the flame of a Bunsen and then letting it cool. Do not put the loop down or blow on it as it cools.

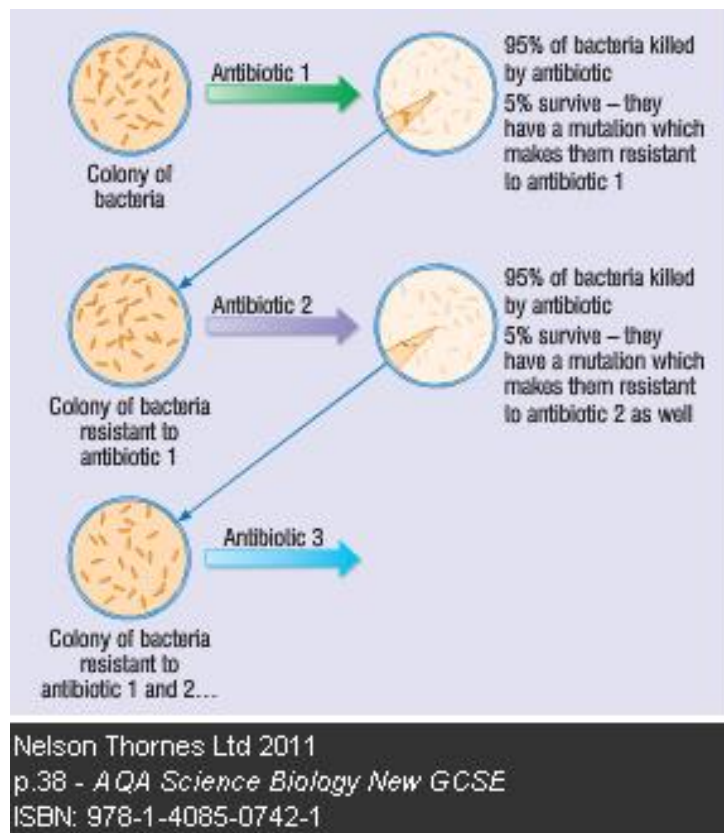


Dip the sterilised loop in a suspension of the bacteria you want to grow and use it to make zigzag streaks across the surface of the agar. Replace the lid on the dish as quickly as possible to avoid contamination.



Seal the lid of the Petri dish with adhesive tape to prevent microorganisms from the air contaminating the culture – or microorganisms from the culture escaping. Do not seal all the way around the edge so oxygen can get into the dish and harmful anaerobic bacteria do not grow.

- Some pathogens, particularly viruses, can mutate forming a mutation. These then survive and reproduce.
- Some new strains can spread causing epidemics or pandemics.



Antibiotic-resistant bacteria are bacteria that have evolved through natural selection. E.g. MRSA.

Antibiotics should not be used too often in order to slow down the rate of resistant strains developing.

