

# Year 9 Biology 2: Cells, Genetics, Inheritance and Modification Knowledge Organiser

## Health and Disease

Non-communicable diseases are diseases that can not be passed on from one organism to another, such as cancer and dietary related diseases.

## STIS

STD's are transmitted through sexual bodily fluids. Common STI's include chlamydia, HIV, gonorrhoea and syphilis. Taking precautions such as condoms and having STD check ups helps to prevent the spread of STD's

## BMI

We measure whether someone is obese using Body Mass Index (BMI). **BMI = weight ÷ (height<sup>2</sup>)**  
 18 or below = underweight, 18.5 – 24.9 = healthy weight, 25 – 29.9 = overweight, 30+ = obese

## Lifestyle Diseases

### Cancer

Caused by rapid uncontrolled cell division

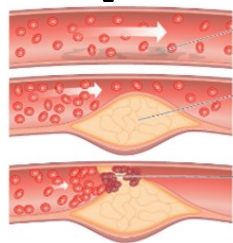
### Liver disease

Caused by excessive alcohol consumption

### Cardiovascular disease

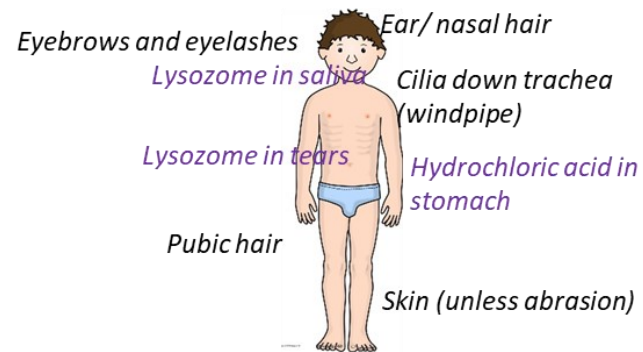
CVD is a non-communicable disease caused by a build up of cholesterol and fat in the arteries. CVD is caused by unhealthy lifestyle such as smoking, poor diet and lack of exercise. Because of this, CVD is often linked to obesity and can cause heart attacks and strokes.

Substances like tobacco damage the artery lining. Fat builds up over time and makes the artery narrower. Blood struggles to flow. A blood clot forms and blocks the arteries. Cells beyond the blockage die due to lack of oxygen, causing strokes and heart attacks



## Chemical and Physical Barriers

Barriers prevent pathogens from making us ill by either stopping their entry or stopping them from multiplying.  
**Physical barriers**- physically stop the pathogen from entering  
**Chemical barriers**- Use chemicals such as enzymes to break down pathogens if they have entered.



Lysozyme is an enzyme (chemical barrier) that breaks down the cell wall of a bacteria- killing the pathogen

## Medicine

Before a new drug can be sold it has to undergo testing to ensure safety and that it actually works.

Test on a culture (group of cells)

Animal testing

Testing on healthy volunteers

Test on small group of people with target disease

This is a blind trial; volunteers don't know if they are taking a drug or a placebo

Test on large group of people with disease

This is a double blind trial; neither the volunteers nor the research know if you are taking the drug or a placebo

## Pathogens

Communicable diseases are diseases that are passed on from one organism to another by pathogens. Pathogens include bacteria, viruses, fungi and protists (carriers of disease).

Pathogens enter the body through

- holes in the body (such as nose, ears)
- cuts to the skin
- Contaminated food and water
- Sexual fluids

## Immune System

If pathogens manage to enter, your immune system tries to prevent you becoming ill. This is controlled by white blood cells called

**phagocytes**: provide a non-specific response. They engulf and digest any pathogens in a process called phagocytosis.

**lymphocytes**: target specific pathogens

