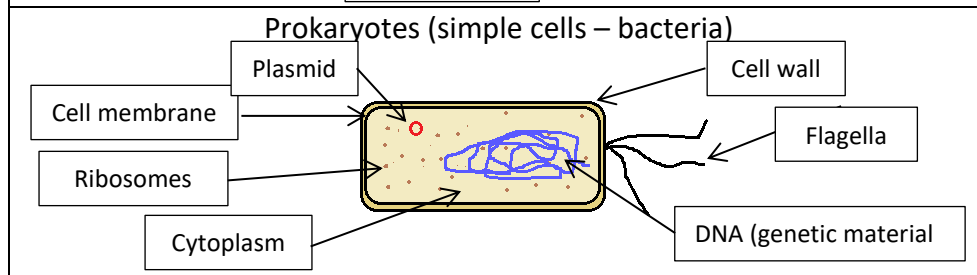
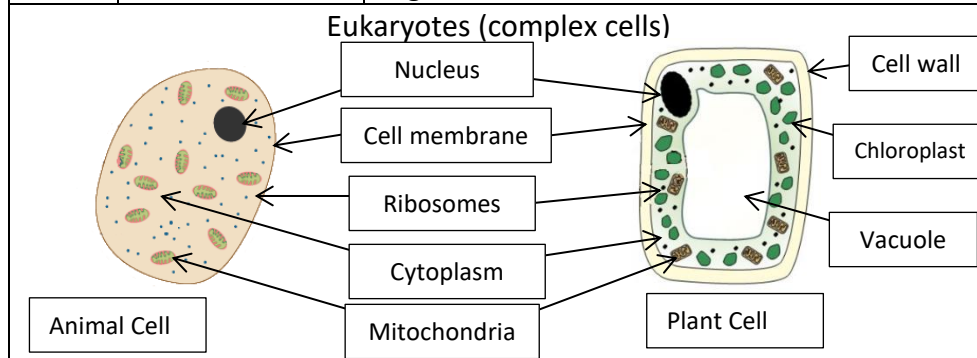


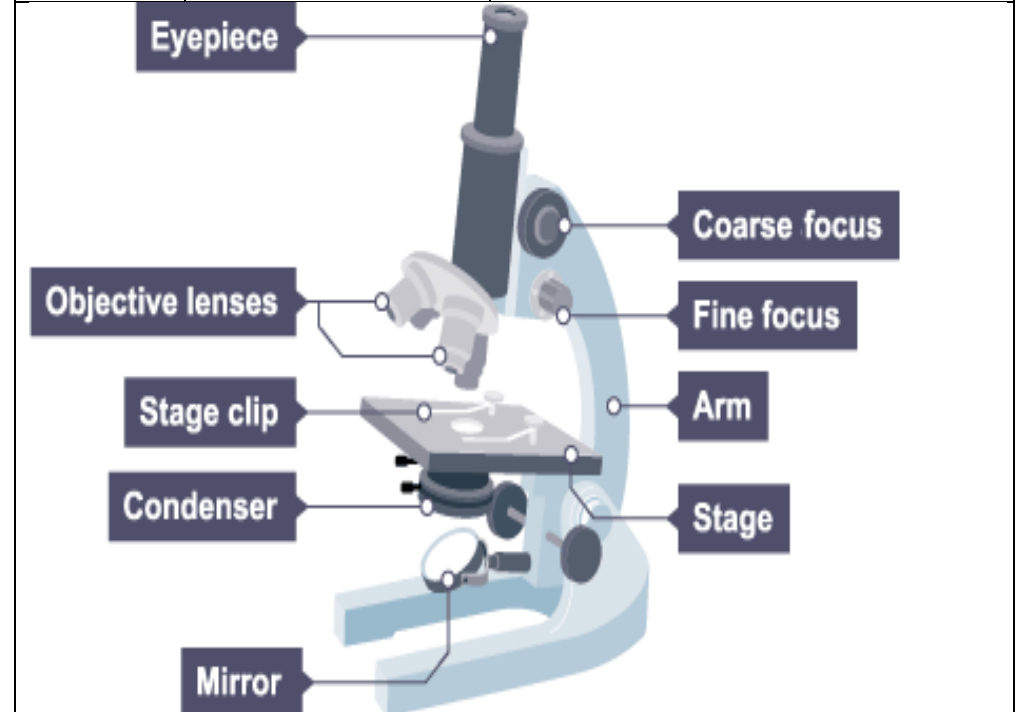
## 1. Cells

	Organelle	Function
1	Nucleus	Controls the cell Contains genetic material
2	Cell membrane	Controls the exchange of substances in and out of the cell
3	Ribosomes	Protein synthesis
4	Cytoplasm	Where chemical reactions occur
5	Mitochondria	Releases energy from aerobic respiration
6	Cell wall	Supports the cell
7	Chloroplasts	Where photosynthesis occurs
8	Vacuole	Contains cell sap
9	Plasmid	Circular ring of DNA
10	flagella	Provides movement for single celled organisms



## 2. History of Microscopes

Year	Scientist	Discovery
1590s	Janssen	<ul style="list-style-type: none"> <li>Dutch Spectacle makers Janssen experimented with putting lenses in tubes. They made the first compound microscope. Magnification x3 to x9</li> </ul>
1650	Robert Hooke	<ul style="list-style-type: none"> <li>observed and drew cells using a compound microscope.</li> </ul>
Late 1600s	Antoine van Leeuwenhoek	<ul style="list-style-type: none"> <li>Constructed a microscope with a single spherical lens. It magnified up to x275</li> </ul>
1800s	General	<ul style="list-style-type: none"> <li>the optical quality of lenses increased, and the microscopes are similar to the ones we use today.</li> </ul>
Present day	General	<ul style="list-style-type: none"> <li>Maximum magnification with a light microscope is around x1500</li> </ul>



### 3. Communicable Disease

Communicable disease	Can be transferred from one person to another, or from one organism. to another
Transmission	The spreading of pathogenic disease, for example by touch, food, water.
How microbes are transmitted:	
<b>Air</b> – pathogens carried in the air in enclosed spaces or close contact.	
<b>Direct and indirect contact</b> – touching an infected person or a surface that has pathogens on.	
<b>Water droplets</b> – from sneezing and coughing.	
<b>Contaminated food</b> – food and water that contain pathogen that need to be removed by heating to kill them.	
<b>Vectors</b> – animals such as rats and insects.	

### 4. Pathogens

Pathogen	Disease	Symptoms	Treatment	Prevention
Bacteria	Tuberculosis	Fever, Head, Coughing, Fatigue	Antibiotics	Vaccination
Virus	Covid-19	Fever, Headache, Muscle soreness	Antivirals	Vaccination, distance.
Fungi	Athletes Foot	Itchiness, red cracked skin between toes	Fungicides	Keep dry and clean
Protist	Malaria	Fever and flue like symptoms	Antimalarials	Mosquito nets
Bacteria	Salmonella	Fever, vomiting and diarrhoea	Antibiotics	Good hygiene and cooking foods fully
Bacteria	Gonorrhoea	Painful urination, yellow green discharge from penis or vagina	Antibiotics	Using condoms and vaccination
Virus	Measles	Fever, red rash covering face and chest	Painkillers for symptoms	Vaccination

### 5. Vaccines

Vaccines are used to provide immunity against viral infections	
Stage	Description
1	Small amount of WEAKENED or DEAD pathogen is injected in to the blood
2	White blood cells respond and start to make antibodies to kill the pathogen
3	Antibodies remain in the blood
4	If re-infected the levels of antibodies drop and the white blood cells make the antibodies QUICKLY to fight of the pathogen

### 6. Antibiotics and Painkillers

Antibiotics	ONLY used to treat bacterial infections. Interferes with the bacterial production or attacks the cell walls of the cell
Antibiotic resistance	Where a bacteria evolves to no longer be killed by an antibiotic

### 7. Discovery of Antibiotics and Vaccines

- Alexander Fleming discovered Penicillin
- Penicillin was discovered almost by accident. Returning from holiday,
- Fleming removed the tops from some old petri dishes and noticed that the bacteria he had grown were being killed by a mould - penicillin.
- He used the word antibiotic to describe penicillin.
- Edward Jenner heard milkmaids claim that they would not catch smallpox as they had already been infected with a far less serious disease, cowpox.
- In 1796, Jenner took cowpox pus from a milkmaid, Sarah Nelmes, and smeared it into a small cut in the arm of eight-year-old James Phipps. Phipps became mildly ill with cowpox.
- Next, Jenner gave Phipps pus from a smallpox victim and James did not become ill.

