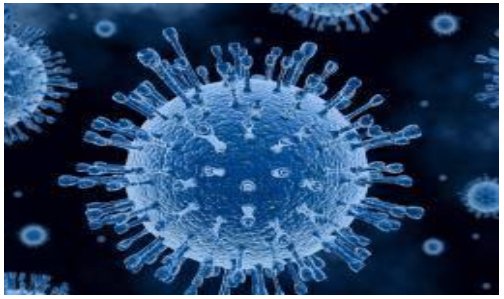
GCSE Infection & Disease



Prior Learning

Year 7 – Basic cell structure to relate to bacteria and viruses

Year 8-Sexual and asexual reproduction in animals and plants; microbiology

Year 9- cell structures animal and bacteria, blood and circulation

Pathogens

Infectious diseases are caused by bacteria, viruses, fungi & protists that **reproduce** inside our cells

Bacteria

Symptoms of **Salmonella** and **Gonorrhoea** & how they are transmitted

Viruses

Measles, HIV and TMV are caused by viruses. Learn how they are transmitted & symptoms of each.

Fungus

Rose black spot is a fungal disease in plants causing black spots and yellow leaves to drop.

Protists

Malaria is caused by protists, which are transmitted by mosquitos. Malaria can be prevented by bed nets, insecticides & GM

Immunity

Skin, mucus, acid, hairs scabs prevent the entry of pathogens

White blood cells perform Phagocytosis, antibody and antitoxin production

Antibiotics (penicillin)

Drugs that kill bacteria & cure bacterial infections

Antibiotic resistance

Vaccines

Understand how vaccines work

Drug Development – roles of lab testing and clinical trials, and use of placebos in double blind trials

Interaction of different diseases

Future Learning

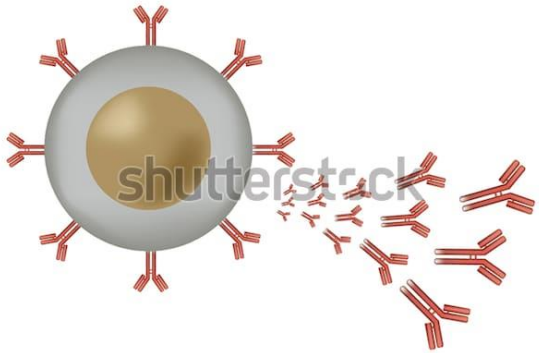
Yr11 – To help understand:

Genetic Modification

Mitosis

Cloning

Mutations



Vocabulary:

pathogen bacteria virus protist antigen antibody

antibiotic vaccination Malaria placebo

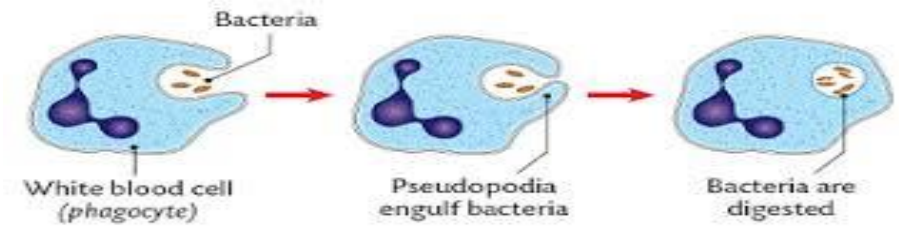
resistant strain toxins immune response Penicillium

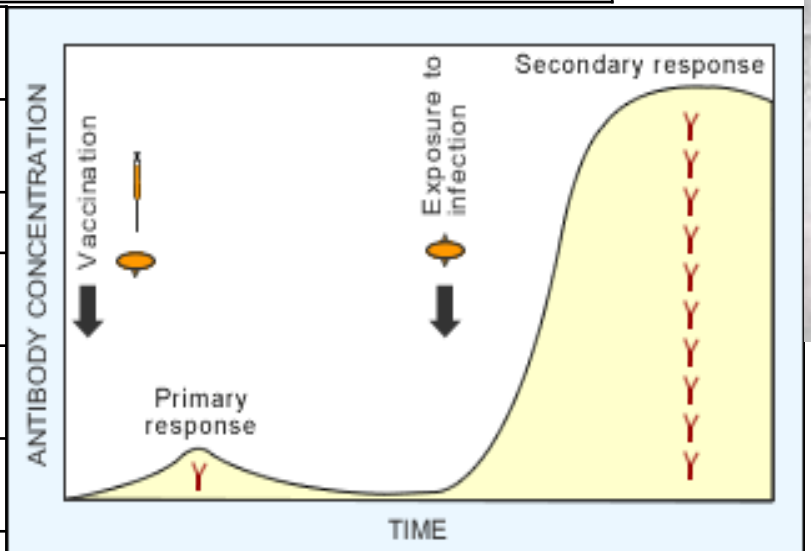
double-blind risk factor

Knowledge Organiser – Infection and Response

Key Terms

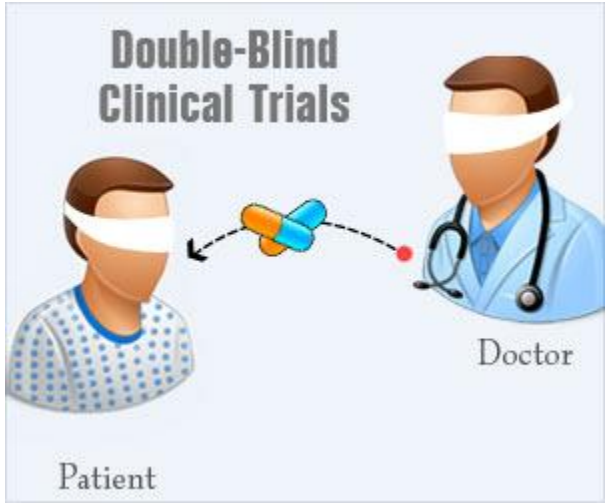
Infectious	Describes a pathogen that can easily be transmitted, or an infected person who can pass on the disease.
Antibiotic	A group of medicines, first discovered by Alexander Fleming, that **kill bacteria** and fungi but not viruses.
Gonorrhoea	A sexually transmitted bacterial infection
Malaria	A communicable disease, caused by a proticist transmitted in mosquitos, which attacks red blood cells.
Antigen	A **protein on the surface of a pathogen** that your antibodies can recognize as foreign.
Antitoxin	A protein produced by your body to neutralize harmful toxins produced by pathogens.
Vaccine	An injection of a dead or weakened pathogen that triggers an immune response so that if you become infected later your body can respond **more quickly** to the pathogen.
Double blind trials	A medical experiment in which the patient and doctors do not know who has been given the drug and who has been given the placebo.
Placebo	A medicine that has only psychological effects.
Phagocytes	White blood cells that **engulf** pathogens.
Lymphocytes	white blood cells that produce **antibodies.**
Antibodies	Y-shaped proteins made by lymphocytes to kill



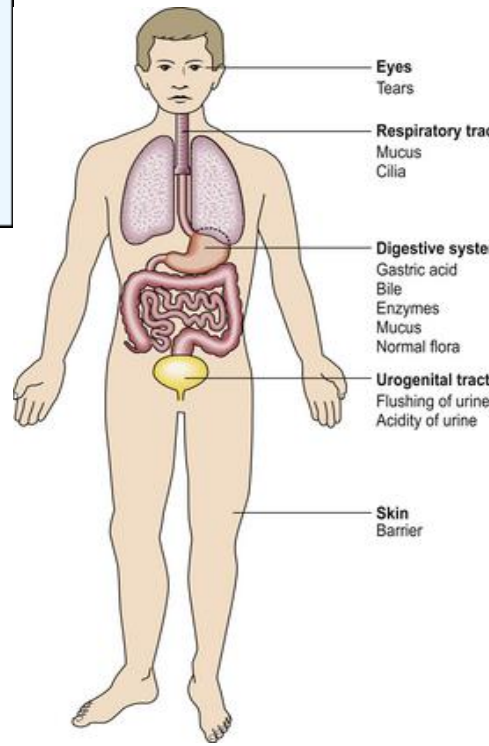


Primary antibody response: the antibody concentration rises gradually and peaks about 2 weeks after vaccination.

Secondary antibody response: the antibody concentration rises quickly, and the response is more intense. The antibody concentration remains higher for longer.



Thalidomide
Sleeping pill
that reduced morning sickness
Now used to treat
Leprosy



Core questions

1. What is an infectious disease? Name 2 infectious diseases caused by viruses
2. Name 2 infectious diseases caused by bacteria
3. Name an infectious disease caused by a protocist
4. Name 2 diseases caused by fungi
6. What is the general name for a microbe that causes a disease?
7. Give 3 ways the body stops microbes getting in
8. Which cells defend against infections?
9. What are antibiotics?
10. Give 3 ways white blood cells kill microbes
11. What are vaccines?
12. What does it mean if you are immune to a disease?
13. What is a placebo?
14. What is a double blind drug trial
15. How is malaria spread?

Key Questions	Answers
1. What is an infectious disease?	A disease that you can catch
2. Name 2 infectious diseases caused by viruses	HIV, measles, tobacco mosaic disease
3. Name 2 infectious diseases caused by bacteria	Salmonella, gonorrhoea
4. Name an infectious disease caused by a protocist	Malaria
5. Name 2 diseases caused by fungi	Athletes foot, rose black spot disease
6. What is the general name for a microbe that causes a disease?	Pathogen
7. Give 3 ways the body stops microbes getting in	Skin, stomach acid, mucus, tears
8. Which cells defend against infections?	White blood cells
9. What are antibiotics?	Drugs that kill bacteria
10. Give 3 ways white blood cells kill microbes	engulf them (phagocytosis), produce antibodies, produce anti-toxins
11. What are vaccines?	Injection of a dead or weakened pathogen to generate immunity against a disease
12. What does it mean if you are immune to a disease?	You cannot catch it because you have antibodies to protect you.
13. What is a placebo?	A tablet that contains no drug
14. What is a double blind drug trial	When neither the patient or Doctor know whether the patient has been given a real drug or placebo
15. How is malaria spread?	Mosquitos