

a
 Circle the correct word in the definitions below and then write the following diseases under the correct group: HIV, cancer, diabetes, measles, rose black spot, heart disease.

communicable disease: Caused by pathogens and can/cannot be passed from one person to another.

non-communicable disease: Can/cannot be passed on from one person to another.

e
 Simple hygiene measures are one of the most effective ways of preventing the spread of pathogens. List 5 ways we can be more hygienic below:

- _____ after using the toilet, before cooking or eating, and after contact with animals or sick people.
- Using _____ on surfaces.
- Keeping _____ away from food that is eaten uncooked.
- _____ or _____ into a tissue.
- Keeping _____, and people using it, clean to prevent the spread of _____ diseases.

Keywords: disinfectants, coughing, plant, raw meat, washing hands, agricultural machinery, sneezing

h
 Measles
 Circle the correct pathogen.
 bacteria, virus, protist, fungus

What are the symptoms?

How is it spread?

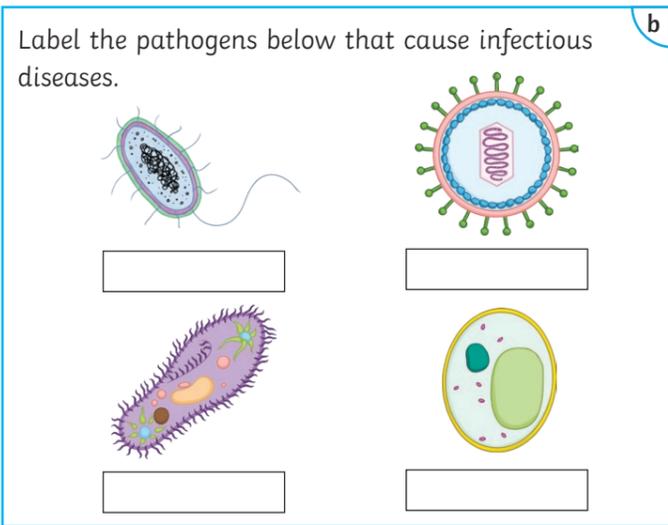
What can we do about it?

k
 HIV
 Circle the correct pathogen.
 bacteria, virus, protist, fungus

What are the symptoms?

How is it spread?

What can we do about it?



f
 List three other methods for preventing the spread of pathogens.

1. Keep infected individuals in _____.
2. Destroy the _____ that carry pathogens.
3. _____.

i
 Tobacco Mosaic Virus
 Circle the correct pathogen.
 bacteria, virus, protist, fungus

What are the symptoms?

How is it spread?

What can we do about it?

l
 Malaria
 Circle the correct pathogen.
 bacteria, virus, protist, fungus

What are the symptoms?

How is it spread?

What can we do about it?

c
 Name three ways that pathogens are spread and match these pathogens with the correct method: cholera, flu, HIV.

1. By a _____: _____.
2. By d _____: _____.
3. By w _____: _____.

g
 Salmonella
 Circle the correct pathogen.
 bacteria, virus, protist, fungus

What are the symptoms?

How is it spread?

What can we do about it?

j
 Gonorrhoea
 Circle the correct pathogen.
 bacteria, virus, protist, fungus

What are the symptoms?

How is it spread?

What can we do about it?

m
 Rose Black Spot
 Circle the correct pathogen.
 bacteria, virus, protist, fungus

What are the symptoms?

How is it spread?

What can we do about it?

d
 How do pathogens cause disease?
 Fill in the gaps.

_____ reproduce rapidly by _____. They may produce _____ that damage tissues and make us feel ill.

_____ take over the cells of your body. They live and rapidly _____ inside, this causes cell damage.

Keywords: toxins, viruses, reproducing, bacteria, binary fission

a Explain how your skin prevents microorganisms getting into your body.

It acts as a _____ to prevent _____ reaching the tissues beneath. _____ quickly form scabs to seal any cuts.

It produces _____ secretions to kill pathogens.

It is covered with _____ that act as an extra barrier to entry.

Keywords: antimicrobial, microorganisms, platelets, barrier, pathogens

b Explain how the respiratory system is adapted to reduce the entry of microorganisms.

The lining of the _____ produces _____ and is full of _____ to trap particles in the air that may contain _____.

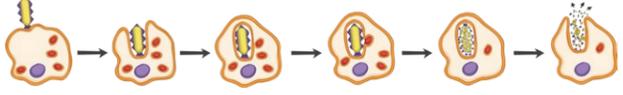
The lining of the _____ and _____ produce _____ which is moved to the back of the throat by the _____ projections of _____ cells.

Keywords: cilia, mucus, nose, pathogens, bronchi, epithelial, trachea, hairs

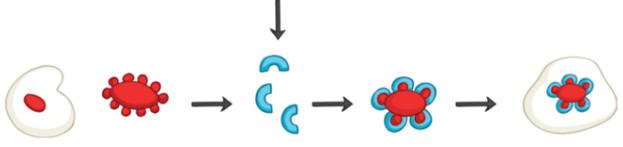
c Explain how the digestive system is adapted to reduce the entry of microorganisms.

The _____ produces _____ acid that destroys pathogens.

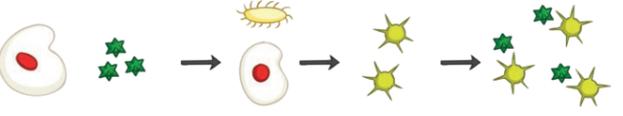
d Describe each role of a white blood cell and explain how it protects you against disease.



Some white blood cells _____ pathogens, digesting and destroying them.



Some white blood cells produce _____ which are chemicals that target _____ pathogens and destroy them. An _____ only works for one type of _____.



Some white blood cells produce _____ that counteract the _____ released by pathogens.

Keywords: toxins, specific, antibody, antibodies, ingest, antitoxins, pathogen

e Tick the correct boxes.

	Treats Symptoms	Kills Bacteria	Kills Viruses
painkillers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
antibiotics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

f Write the correct keyword next to its definition:

vaccine, herd immunity, antigen, antibody

Dead or inactivated form of a disease causing microorganism. _____

Unique protein on the surface of cells. _____

Produced by white blood cells to recognise specific antigens. _____

When vaccination of a significant proportion of the population provides protection for individuals who are not immune. _____

g Describe how vaccinations prevent illness.

1. Introduce small quantities of _____ virus.
2. This stimulates white blood cells to produce _____.
3. If the live _____ enters the body, the white blood cells _____ it and respond _____ so you don't get ill.

h Fill in the missing words:

The use of _____ has greatly reduced the deaths from infectious _____ diseases. However, the evolution of strains that are _____ to antibiotics is a concern.

_____ are specific which means they only work against _____.

Keywords: bacterial, certain bacteria, resistant, antibiotics

i State where the following drugs were discovered.

The heart drug digitalis: _____

The painkiller aspirin: _____

The antibiotic penicillin: _____

Who discovered penicillin? _____

Why is it difficult to discover new medicines?

j Where do most new drugs now come from?

_____ by chemists in a lab, but they might still start from a chemical extracted from a _____.

What has to happen before a drug can be used?

1. Test whether the drug is _____ against the disease.
2. Check that the drug is not _____.
3. Work out what _____ to use.

k Describe each process of drug testing.

preclinical testing:

clinical trials:

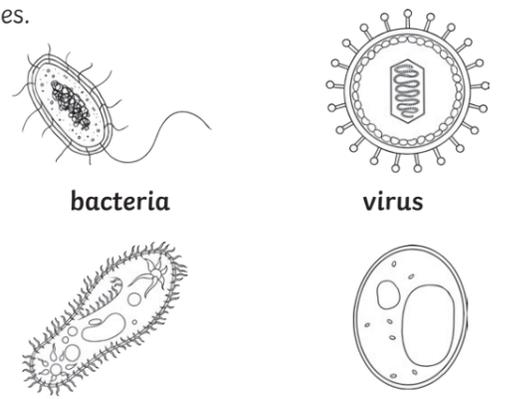
double-blind trials:

Circle the correct word in the definitions below and then write the following diseases under the correct group: HIV, cancer, diabetes, measles, rose black spot, heart disease.

communicable disease: Caused by pathogens and **can/cannot** be passed from one person to another.
HIV, measles, rose black spot

non-communicable disease: Can/**cannot** be passed on from one person to another.
cancer, diabetes, heart disease

Label the pathogens below that cause infectious diseases.



bacteria **virus**

protist **fungi**

Name three ways that pathogens are spread and match these pathogens with the correct method: cholera, flu, HIV.

1. By **air: flu.**
2. By **direct contact: HIV.**
3. By **water: cholera.**

How do pathogens cause disease? Fill in the gaps.

Bacteria reproduce rapidly by **binary fission**. They may produce **toxins** that damage tissues and make us feel ill.

Viruses take over the cells of your body. They live and rapidly **reproduce** inside, this causes cell damage.

Keywords: toxins, viruses, reproducing, bacteria, binary fission

Simple hygiene measures are one of the most effective ways of preventing the spread of pathogens. List 5 ways we can be more hygienic below:

- **Washing hands** after using the toilet, before cooking or eating, and after contact with animals or sick people.
- Using **disinfectants** on surfaces.
- Keeping **raw meat** away from food that is eaten uncooked.
- **Coughing** or **sneezing** into a tissue.
- Keeping **agricultural machinery**, and people using it, clean to prevent the spread of **plant** diseases.

Keywords: disinfectants, coughing, plant, raw meat, washing hands, agricultural machinery, sneezing

List three other methods for preventing the spread of pathogens.

1. Keep infected individuals in **isolation**.
2. Destroy the **vectors** that carry pathogens.
3. **vaccination**.

Salmonella
 Circle the correct pathogen.
bacteria, virus, protist, fungus

What are the symptoms?
Fever, abdominal cramps, vomiting and diarrhoea.

How is it spread?
Eating undercooked food or food contaminated from contact with raw meat, e.g. raw chicken.

What can we do about it?
Poultry are vaccinated to control the spread.

Measles
 Circle the correct pathogen.
 bacteria, **virus**, protist, fungus

What are the symptoms?
A fever and red rash on the skin. Can be fatal if there are complications.

How is it spread?
By air - the inhalation of droplets from coughs and sneezes.

What can we do about it?
There is no treatment, so young children are vaccinated against it.

Tobacco Mosaic Virus
 Circle the correct pathogen.
 bacteria, **virus**, protist, fungus

What are the symptoms?
Mosaic discolouration of the leaves which reduces photosynthesis and affects the growth of the plant.

How is it spread?
Direct contact between diseased plant material and healthy plants. Insects can also act as vectors.

What can we do about it?
TMV resistant strains. Good hygiene and pest control.

Gonorrhoea
 Circle the correct pathogen.
bacteria, virus, protist, fungus

What are the symptoms?
Thick yellow or green discharge from the vagina or penis and pain on urinating.

How is it spread?
Sexual contact.

What can we do about it?
Treat with antibiotics. Use a barrier method of contraception.

HIV
 Circle the correct pathogen.
 bacteria, **virus**, protist, fungus

What are the symptoms?
Initially causes a flu-like illness. Damages the immune system so that it can't deal with other infections or cancers.

How is it spread?
Sexual contact or exchange of bodily fluids, such as blood.

What can we do about it?
Antiretroviral drugs help to stop the virus attacking the immune system. There is no cure or vaccine.

Malaria
 Circle the correct pathogen.
 bacteria, virus, **protist**, fungus

What are the symptoms?
Recurrent fever. Can be fatal.

How is it spread?
Mosquitos act as a vector, passing the protist to the human bloodstream when they feed on the blood.

What can we do about it?
Preventing the vectors (mosquitos) from breeding. Using mosquito nets and repellents to avoid being bitten. Taking antimalarial drugs.

Rose Black Spot
 Circle the correct pathogen.
 bacteria, virus, protist, **fungus**

What are the symptoms?
Purple or black spots develop on the leaves. Leaves turn yellow and fall off prematurely which reduces photosynthesis, affecting the growth of the plant.

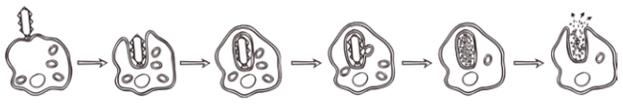
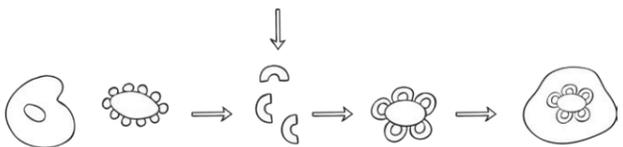
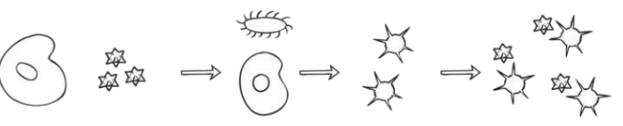
How is it spread?
Spores are carried by water or wind.

What can we do about it?
Use fungicides to treat the plant. Remove and destroy affected leaves.

a
 Explain how your skin prevents microorganisms getting into your body.
 It acts as a **barrier** to prevent **pathogens** reaching the tissues beneath. **Platelets** quickly form scabs to seal any cuts.
 It produces **antimicrobial** secretions to kill pathogens.
 It is covered with **microorganisms** that act as an extra barrier to entry.
Keywords: antimicrobial, microorganisms, platelets, barrier, pathogens

b
 Explain how the respiratory system is adapted to reduce the entry of microorganisms.
 The lining of the **nose** produces **mucus** and is full of **hairs** to trap particles in the air that may contain **pathogens**.
 The lining of the **trachea** and **bronchi** produce **mucus** which is moved to the back of the throat by the **cilia** projections of **epithelial** cells.
Keywords: cilia, mucus, nose, pathogens, bronchi, epithelial, trachea, hairs

c
 Explain how the digestive system is adapted to reduce the entry of microorganisms.
 The **stomach** produces **hydrochloric acid** that destroys pathogens.

d
 Describe each role of a white blood cell and explain how it protects you against disease.

 Some white blood cells **ingest** pathogens, digesting and destroying them.

 Some white blood cells produce **antibodies** which are chemicals that target **specific** pathogens and destroy them. An **antibody** only works for one type of **pathogen**.

 Some white blood cells produce **antitoxins** that counteract the **toxins** released by pathogens.
Keywords: toxins, specific, antibody, antibodies, ingest, antitoxins, pathogen

e
 Tick the correct boxes.

	Treats Symptoms	Kills Bacteria	Kills Viruses
painkillers	✓		
antibiotics		✓	

f
 Write the correct keyword next to its definition:
 vaccine, herd immunity, antigen, antibody
 Dead or inactivated form of a disease causing microorganism. **vaccine**
 Unique protein on the surface of cells. **antigen**
 Produced by white blood cells to recognise specific antigens. **antibody**
 When vaccination of a significant proportion of the population provides protection for individuals who are not immune. **herd immunity**

g
 Describe how vaccinations prevent illness.
 1. Introduce small quantities of **dead or inactive** virus.
 2. This stimulates white blood cells to produce **antibodies**.
 3. If the live **pathogen** enters the body, the white blood cells **recognise** it and respond **quickly** so you don't get ill.

h
 Fill in the missing words:
 The use of **antibiotics** has greatly reduced the deaths from infectious **bacterial** diseases. However, the evolution of strains that are **resistant** to antibiotics is a concern.
Antibiotics are specific which means they only work against **certain bacteria**.
Keywords: bacterial, certain bacteria, resistant, antibiotics

i
 State where the following drugs were discovered.
 The heart drug digitalis: **foxglove**
 The painkiller aspirin: **willow**
 The antibiotic penicillin: **Penicillium mould**
 Who discovered penicillin? **Alexander Fleming**
 Why is it difficult to discover new medicines?
You need to find a chemical that kills bacteria without damaging human cells.

j
 Where do most new drugs now come from?
Synthesised by chemists in a lab, but they might still start from a chemical extracted from a **plant**.
 What has to happen before a drug can be used?
 1. Test whether the drug is **effective** against the disease.
 2. Check that the drug is not **toxic**.
 3. Work out what **dose** to use.

k
 Describe each process of drug testing.
 preclinical testing:
This happens in a laboratory using cells, tissues and animals.
 clinical trials:
To use healthy volunteers and patients. Starting off with very low doses to check for side effects. If it is safe it is tested on patients.
 double-blind trials:
These tell you how effective a medicine is. Neither the patient or the doctor know whether the patient has been given a placebo or the real drug.