Name:
Science Class:
Teacher:
Hand in day:

Y8 Science
Term 3 Homework Booklet
Biology

	Hand in Date	Parents Signature
The Immune System		
Homework 1		
Homework 2		

Infectious Diseases Homework 1

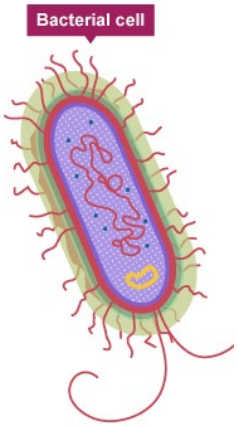
Comprehension Task

An infectious disease is any disease caused by a pathogen that can be passed from person to person. A pathogen is the scientific name for “germ” and is a microorganism that invades the body and damage cells and tissues, making us feel ill.

There are three main types of pathogens: viruses, bacteria, and fungi.

Bacteria

There are many different types of bacteria, and not all bacteria cause disease. Many bacteria, like those found in the intestines are useful. All bacteria are prokaryotes and do not have a nucleus. They are larger than viruses but cannot be seen without a microscope.



Bacteria cause diseases such as salmonella food poisoning, tuberculosis; a disease of the respiratory system and tetanus; a disease that can affect the nervous system.

Bacteria produce toxins that damage cells and tissues and make us feel unwell.

Bacterial infections can be treated with antibiotics.

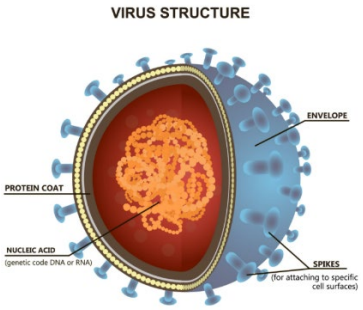
Viruses

Viruses are not alive as they do not complete all the seven life processes (MRS GREN). They are made of a short length of genetic material (DNA) which is surrounded by a protein coat. They are smaller than bacteria.

Unlike bacteria they do not produce toxins. Instead, they infect the cells of the host and replicate their DNA and protein coats inside them. These are then assembled into new virus particles. The viruses burst out of the cell, destroying it, and then go on to infect nearby cells.

Viruses causes diseases such as Covid 19 (Coronavirus), the C common cold, measles, influenza, and chicken pox.

Viral infections cannot be treated with antibiotics.



Fungi

As with bacteria, not all fungi cause diseases. Yeast is a single celled fungus that we use to make bread. Not all fungi are single-celled. Some such as mushrooms are multicellular.

Fungal cells have a nucleus and therefore are eukaryotic. They also have a cell wall.

Athlete’s foot is a disease caused by a fungus that is found between people’s toes. It causes cracked and flaky skin.

Fungal diseases are treated with antifungal medication.

Questions

1. What is a pathogen?

2. How do pathogens make us feel ill?

3. Where can we find useful bacteria?

4. Are bacteria prokaryotes or eukaryotes? How do we know?

5. How do bacteria damage our cells?

6. Give an example of a bacterial disease.

7. Are viruses alive? How do we know?

8. Where do viruses replicate?

9. Which pathogen cannot be treated with antibiotics?

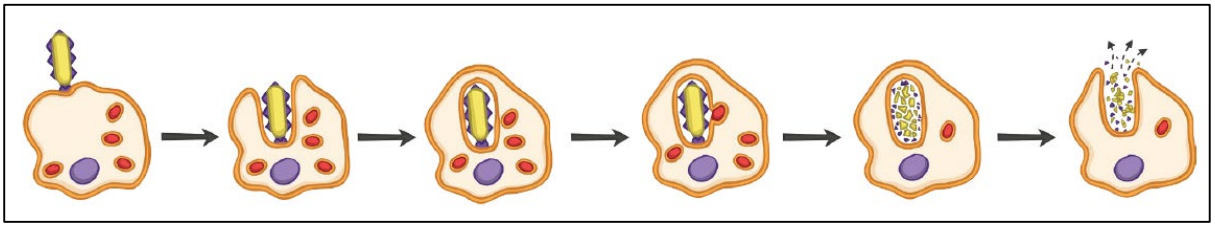
10. Are all fungi single celled organisms? Give examples in your answer.

Infectious Diseases Homework 2

1. Complete the table to explain how the body's non-specific defence mechanisms prevent pathogens entering the body. The first one has been completed for you.

Area of the body	How it stops pathogens
Nose	*Mucus and hairs trap microorganisms and dust.*
Skin	
Trachea	
Bronchi	
Stomach	

1.



What process is this?

_____

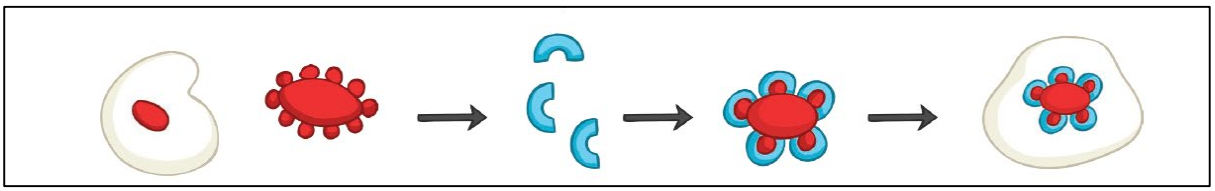
Use the word bank to complete the sentences and explain what is happening.

a) The white blood cell (phagocyte) identifies a pathogen and _____ it with cytoplasm.

b) The pathogen is _____ by the white blood cell.

c) The pathogen is _____.

2.



What process is this?

_____

Use the word bank to complete the sentences and explain what is happening.

a) The white blood cell identifies a pathogen and produces _____ specific to that pathogen.

b) The _____ are the right _____ to attach to the _____ on the surface of the pathogen.

c) The pathogen is _____ by a _____.

Word Bank				
digested	antibodies	antitoxins	shape	engulfed
antigens	phagocyte	engulfed	surrounds	antibodies

3. In your own words, explain the third way that white blood cells protect us from pathogens.

_____

_____

_____

_____

_____

_____

_____

_____

Infectious Diseases Homework (Challenge/Scholars)

1. The steps below, explaining how a vaccination works are muddled up. Write them out in the correct order.

a) The antibodies are specific to the antigens found in the vaccination.

b) If the pathogen enters the body in the future, the white blood cells work much more quickly to produce the specific antibodies needed to destroy the pathogen.

c) It is injected into a person. This is a vaccination.

d) This faster response protects the person from getting ill with the disease.

e) Some white blood cells remain that will recognise the pathogen if it infects the body in future.

f) A sample of the pathogen is weakened or killed.

g) The person's white blood cells make antibodies against the pathogen.

h) A small amount of the dead or inactive pathogen is put into a sterile liquid.

1.

2.

3.

4.

5.

6.

7.

8.