Paper 1

Chapter 3 — Infection and Response

Pathogens

Microorganisms that cause infectious disease are called p_____.

The 4 types of pathogens are v_____, b_____, p_____ or f____. They may infect animals or p_____.

Bacteria and viruses may r_____ rapidly inside the body.

Bacteria may make us feel unwell by producing t_____ that damage tissues inside the body. Viruses live and reproduce inside c___, causing c___ damage.

Drugs Match the drug to the source

Digitalis (Heart Drug)	Willow Tree
Aspirin	Mould
Penicillin	Foxgloves

Vaccination

Label the stages of the vaccination process. Include the following words.

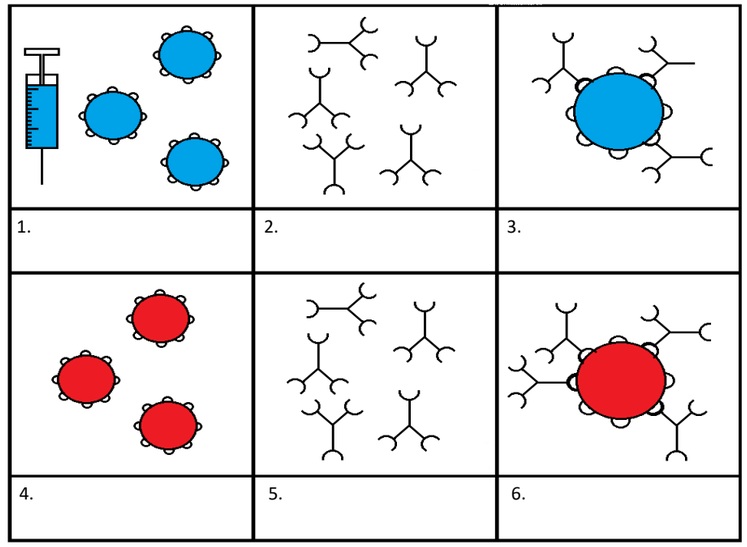
Dead or inactive

White blood cells

Antibodies

Antigen

Pathogen



Antibiotics

Antibiotics kill b_____ pathogens but cannot kill v____ pathogens.

Each type of bacterial pathogen needs a s_____ antibiotic to treat it.

Painkillers do not k___ pathogens but only relieve the s_____ of the disease.

It is difficult to kill v___ pathogens with drugs as they reproduce i____ the patients c___ and the drug may damage the cells.

In recent years a number of antibiotic r_____ strains of bacteria have appeared .

Human Defence Systems

Solve the anagrams for parts of the body that defend against pathogens. Write a sentence for each to explain how it works.

SINK

SONE

RACHATE/CHOBRIN

MACHOST CAID

Solve the anagrams for the ways white blood cells respond to pathogens. Write a sentence for each to explain how it works.

STOPCHIAGOSY

BESTIDIANO

TAINTINSOX

Developing new drugs

3 things we test drugs for 1.) 2.) 3.)

Draw and label the 4 stages of drug tests

1.) 2.) 3.) 4.)

In d_____ blind trials, some patients are given a fake drug called a p_____. They may feel better due to the p_____ e_____. Neither the d_____ or the p_____ know who has the real drug to prevent b___.

Disease Name	Salmonella Food Poisoning	Measles	HIV	Gonorrhoea	Malaria	Tobacco Mosaic Virus	Rose Black Spot
Type of Pathogen							
How it spreads						**Remains in soil and infects plants that grow there, Spread by insects**	
Symptoms							
Prevention						**Burn infected plants**	
Treatment	**Usually no treatment**	**No specific treatment, Painkillers to reduce symptoms**			**Anti-Malarial Drugs e.g. Malarone**	**No cure**	

Paper 1

Chapter 3 — Infection and Response

Pathogens

Microorganisms that cause infectious disease are called pathogens.

The 4 types of pathogens are viruses, bacteria, protists or fungi. They may infect animals or plants.

Bacteria and viruses may reproduce rapidly inside the body.

Bacteria may make us feel unwell by producing toxins that damage tissues inside the body. Viruses live and reproduce inside cells, causing cell damage.

Drugs Match the drug to the source

Digitalis (Heart Drug)	Willow Tree
Aspirin	Mould
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Vaccination

Label the stages of the vaccination process. Include the following words.

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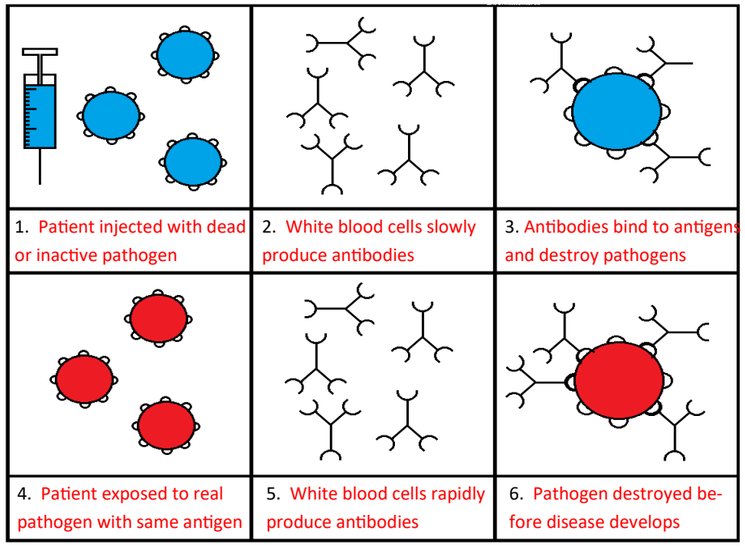

1. Patient injected with dead or inactive pathogen
2. White blood cells slowly produce antibodies
3. Antibodies bind to antigens and destroy pathogens
4. Patient exposed to real pathogen with same antigen
5. White blood cells rapidly produce antibodies
6. Pathogen destroyed before disease develops

Antibiotics

Antibiotics kill bacterial pathogens but cannot kill viral pathogens.

Each type of bacterial pathogen needs a specific antibiotic to treat it.

Painkillers do not kill pathogens but only relieve the symptoms of the disease.

It is difficult to kill viral pathogens with drugs as they reproduce inside the patients cells and the drug may damage the cells.

In recent years a number of antibiotic resistant strains of bacteria have appeared .

Human Defence Systems

Solve the anagrams for parts of the body that defend against pathogens. Write a sentence for each to explain how it works.

SINK — Skin - Acts as a barrier to pathogens, Scabs and scars to seal cuts

SONE — Nose - Hairs to filter pathogens in the air, mucus to trap pathogens

RACHATE/CHOBRIN — Trachea/Bronchi - Cilia and mucus to trap pathogens before the lungs

MACHOST CAID — Stomach Acid - Kills many bacterial pathogens

Solve the anagrams for the ways white blood cells respond to pathogens. Write a sentence for each to explain how it works.

STOPCHIAGOSY — Phagocytosis - Phagocyte white blood cells engulf and break down pathogens

BESTIDIANO — Antibodies - Produced by Lymphocytes to clump pathogens for phagocytosis

TAINTINSOX — Antitoxins - Bind and neutralise toxins from pathogens

Developing new drugs

3 things we test drugs for 1.) Optimal Dose 2.) Effectiveness 3.) Safety (non-toxic)

Draw and label the 4 stages of drug tests

1.) 2.) 3.) 4.)

Cells/Tissues Animals Healthy Volunteers Sick Patients

In double blind trials, some patients are given a fake drug called a placebo. They may feel better due to the placebo effect. Neither the doctors or the patients know who has the real drug to prevent bias.

Disease Name	Salmonella Food Poisoning	Measles	HIV	Gonorrhoea	Malaria	Tobacco Mosaic Virus	Rose Black Spot
Type of Pathogen	Bacteria	Virus	Virus	Bacteria	Protist	Virus	Fungus
How it spreads	Unhygienic food preparation	Inhaling droplets from coughs and sneezes	Sharing body fluids e.g. Sexual contact or drug users sharing needles	Sexual Contact	Mosquito (Vector) bites	**Remains in soil and infects plants that grow there, Spread by insects**	Water or wind
Symptoms	Fever, Abdominal Cramps, Vomiting, Diarrhoea	Fever, red skin rash, can be fatal	Initially Flu like, Attacks immune cells (AIDs is when the immune system no longer functions)	Thick yellow/green discharge from vagina or penis. Pain when urinating	Fever, tiredness, vomiting, can be fatal	Mosaic Pattern on leaves, reduced photosynthesis	Purple/Black spots on leaves, leaves then go yellow and may fall early causing reduced photosyn-
Prevention	Vaccinating poultry, cook food properly	Vaccine	Barrier Contraception e.g. condoms, Don't share needles	Barrier Contraception e.g. condom	Killing mosquitos with insecticide, Using mosquito nets	**Burn infected plants**	Removing/Destroying affected leaves and plant
Treatment	**Usually no treatment**	**No specific treatment, Painkillers to reduce symptoms**	No cure, Antiretroviral drugs slow development of AIDs	Antibiotics (resistant strains now appearing)	**Anti-Malarial Drugs e.g. Malarone**	**No cure**	Fungicides