



Year:

9

Term:

Su2

Topic:

- 1 Define "health"
- 2 What is the name for a disease that can be passed on from person to person?
- 3 What is the name for a disease that can NOT be passed on from person to person?
- 4 State three factors other than disease that can have an impact on health
- 5 State one consequence of long term physical ill health
- 6 What is the name given to a disease causing microorganism?
- 7 Define "risk factors"
- 8 State three risk factors for cardiovascular disease
- 9 State one risk factor for type 2 diabetes
- 10 Name 2 organs effected by drinking alcohol
- 11 Name 2 potential impacts of smoking
- 12 State a risk factor for cancer
- 13 State two lifestyle factors that can impact an unborn babies development
- 14 Why is a sample of people used when investigating risk factors for diseases?

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Introducing pathogens and types of disease (B.7)

State of physical and mental well being
Communicable (or infectious)
Non-communicable
Diet, stress, life events
Depression
Pathogen
Factors that are linked to an increased rate of disease
Diet, smoking and exercise
Obesity
Brain and Liver
Lung disease and lung cancer
Contact with carcinogens (including ionising radiation)
Smoking and drinking alcohol
Too time consuming/impractical to sample whole population

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Topic:

- 1 Name 4 types of pathogen
- 2 Name 3 viral diseases
- 3 Name 2 bacterial diseases
- 4 Name 1 fungal disease
- 5 Name 1 protist disease
- 6 State 2 symptoms of measles
- 7 State 2 symptoms of HIV
- 8 State 1 symptom of TMV
- 9 State 2 symptoms of salmonella
- 10 State 2 symptoms of gonorrhoea
- 11 State 2 symptoms of rose black spot
- 12 How is measles spread & prevented?
- 13 How is Gonorrhoea spread & prevented?
- 14 How is Rose Black Spot spread & prevented?
- 15 How is Salmonella spread & prevented?

Topic:

- 1 State 3 ways that pathogens can be spread
- 2 How do bacteria make us feel unwell?
- 3 How do viruses make us feel unwell?
- 4 Name 4 of the body's non-specific defence systems
- 5 How does the skin prevent pathogens from making us unwell?
- 6 How does the nose prevent pathogens from making us unwell?
- 7 How does the trachea prevent pathogens from making us unwell?
- 8 How does the stomach prevent pathogens from making us unwell?
- 9 State three ways that white blood cells can help to defend us against pathogens
- 10 Which type of white blood cell carries out phagocytosis?
- 11 Which type of white blood cell carries out antibody and antitoxin production?
- 12 State one thing that can trigger cancers to form
- 13 What causes tumours to form?
- 14 Define "benign tumour"
- 15 Define "malignant tumour"

Topic:

- 1 State three ways that drugs can be produced
- 2 Where does the heart drug digitalis originate from?
- 3 Where does the pain killer aspirin originate from?
- 4 Where does the antibiotic penicillin originate from?
- 5 State three things that drugs are tested and trialled for before use
- 6 What is used to test drugs during preclinical testing?
- 7 Who are medicines tested on in stage 1 of clinical trials?
- 8 Who are medicines tested on in stage 2 of clinical trials?
- 9 What is a double blind trial?
- 10 What is a placebo?
- 11 What is the name for the injection given to patients to prevent them from catching an infectious disease?
- 12 Describe step 1 of vaccinations
- 13 Describe step 2 of vaccinations
- 14 Describe step 3 of vaccinations
- 15 State two benefits of vaccination

Topic:

- 1 State 7 ways of detecting plant diseases
- 2 State 3 ways of identifying a plant disease
- 3 Name one viral disease that affects plants
- 4 Name one fungal disease that affects plants
- 5 Name one insect that affects plants
- 6 State the effect of nitrate deficiencies in plants
- 7 State the effect of magnesium deficiencies in plants
- 8 Name 3 physical defences in plants
- 9 Name 2 chemical defences in plants
- 10 Name 3 mechanical adaptations of plants
- 11 What is the name given to the chemical that is sprayed on plants to kill pests?
- 12 What is the name given to the chemical that is sprayed on plants to kill weeds?
- 13 What is the name given to chemicals that are sprayed on plants to encourage growth?
- 14 What does NPK stand for in fertilisers?
- 15 What is the name given to plants that have been grown without the use of artificial chemicals?

Detailed disease case studies (B.8)

Virus, bacteria, fungi, protist
Measles, HIV, TMV (tobacco mosaic virus)
Salmonella & Gonorrhoea
Rose black spot
Malaria
Fever, Red skin rash
Flu-like symptoms, AIDS
Discolouration of leaves
Fever, Cramps, Omitting, Diarrhoea
Thick yellow/green discharge, Pain urinating
Purple/black spots on leaves, Leaves turn yellow & drop off
Spread: Air Prevented: Vaccination
Spread: Sex Prevented: Condoms
Spread: Direct contact Prevented: Fungicide & destroying affected leaves
Spread: Food Prevented: Cooking thoroughly & washing hands

Preventing pathogens from making us unwell (B.9)

Direct contact, water, air
Produce toxins (poisons) that damage tissues
Live & reproduce in cells causing cell damage
Skin, nose, trachea, stomach
Prevent them from entering body
Mucus to trap dirt & pathogens, ciliated cells to sweep it out
Mucus to trap dirt & pathogens, ciliated cells to sweep it out
Stomach acid to kill pathogens
Phagocytosis, antibody production, antitoxin production
Phagocytes
Lymphocytes
Viruses in cells
Changes in cells that lead to uncontrolled growth and division
Growth of abnormal cells contained in ONE area in a membrane
Growth of abnormal cells that SPREAD to other parts of the body in blood and INVADE other tissues.

Developing new medicines (B.10)

Extracted from plants, microorganisms & synthesised
Foxgloves (plant)
Willow trees
Penicillium mould
1) Toxicity (safe), 2) efficacy (does it work), 3) dose (quantity)
Cells, tissues & live animals
Healthy volunteers (low doses - test for toxicity)
Patient volunteers (low doses - test for efficacy & dose)
Neither experimenter or patient knows if they are taking medicine or placebo
A substance that contains no medicine (a control)
Vaccination
1) small quantity of dead/inactive pathogen
2) white blood cells produce correct antibody (slowly)
3) pathogen enters body & WBC produce correct antibodies (quickly)
Prevent illness in an individual & prevent spread to others

Plant diseases (separate only) (B.12)

1) Stunted growth, 2) Spots on leaves, 3) areas of decay, 4) growths, 5) malformed leaves/stems, 6)
1) Gardening manual/website, 2) testing in lab, 3) testing using MAB (monoclonal antibodies)
Tobacco Mosaic Virus (TMV)
Rose black spot
aphids
Stunted growth
Chlorosis (discolouration)
1) cellulose cell walls, 2) tough waxy cuticle, 3) layers of dead cells on stems (e.g. bark)
1) antibacterial chemicals, 2) poisons
1) Thorns/hairs, 2) drooping/curling leaves, 3) mimicry
Pesticides
Herbicides
Fertilisers
Nitrogen, Phosphorus and Potassium
Organic

Science Knowledge Organiser

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Topic:

- 1 State the location & function of the cerebral cortex
- 2 State the location & function of the cerebellum
- 3 State the location & function of the medulla
- 4 Why is it difficult to investigate brain function?
- 5 State three ways of investigating brain functions & regions
- 6 State two changes that can occur in the eye
- 7 State two things that the eye organ is sensitive to
- 8 State the name of the coloured part of our eye that expands in bright light and contracts in dim light.
- 9 State the name of the whole in the front of our eye that allows light in
- 10 What happens to the size of the iris and pupil during bright light
- 11 What is the name for the light detecting cells at the back of the eye?
- 12 What happens to the eye during accommodation for focussing on near objects?
- 13 What happens to the eye during accommodation for focussing on far objects?
- 14 State the name for short sightedness
- 15 State the name for long sightedness

Topic:

- 1 State the two cells required to produce monoclonal antibodies
- 2 Name the cell that is produced from joining the two cells together in monoclonal antibody production
- 3 State 4 uses of monoclonal antibodies
- 4 How are monoclonal antibodies used in cancer treatment
- 5 Why are "monoclonal antibodies" given this name?
- 6 Where is the lymphocyte that is used in monoclonal antibodies collected from?
- 7 Why is a lymphocyte used for making monoclonal antibodies?
- 8 Why is a tumour cell used in the production of monoclonal antibodies?
- 9 State two advantages of using monoclonal antibodies
- 10 State two disadvantages of using monoclonal antibodies
- 11 State 3 examples of side effects caused by monoclonal antibodies
- 12 State 4 uses of monoclonal antibodies
- 13 How are monoclonal antibodies used in cancer treatment
- 14 State two advantages of using monoclonal antibodies
- 15 State two disadvantages of using monoclonal antibodies

The Brain and eye (separate only) (B.13)

Outer section - perception, memory, language
Base of brain - balance & co-ordination of voluntary movement
In brain stem - controls involuntary functions e.g. breathing
Lots of different areas work together
Brain damage patients, electrical stimulation of brain regions, MRI scanning
Accommodation (for focussing on near/far objects)
Light intensity & colour
Iris
Pupil
Pupil = small
Retina
1) Ciliary muscles contract 2) Suspensory ligaments loosen 3) lens is thick -> more refraction
1) Ciliary muscles relax 2) Suspensory ligaments pulled tight 3) lens is thin -> less refraction
Myopia (focal point in front of retina)
Hyperopia (focal point past retina)

Monoclonal antibodies (separate only) (B.39)

1) Mouse lymphocyte 2) tumour cell
Hybridoma
Diagnosis (e.g. pregnancy tests), testing in labs, tagging molecules with dye, disease treatment
MAB bound to radioactive substance that finds & binds with cancer cells
Formed from clones of a single hybridoma cell
A mouse
It produces a specific antibody
It divides rapidly
Treat a wide range of conditions, bind to specific cells so as not to damage surrounding cells
Expensive, lots of side effects
Fever, muscle pains, nausea
Diagnosis (e.g. pregnancy tests), testing in labs, tagging molecules with dye, disease treatment
MAB bound to radioactive substance that finds & binds with cancer cells
Treat a wide range of conditions, bind to specific cells so as not to damage surrounding cells
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