KESTEVEN AND SLEAFORD HIGH SCHOOL

Biology Scheme of Learning

Year 10 – Term 1 /Unit 5

Intent – Rationale

Building on students understanding of diseases this unit focuses on communicable diseases. Students consider the different pathogens and the diseases they cause alongside the symptoms and treatments.

Sequencing – what prior learning does this topic build upon?	Sequencing – what subsequent learning does this topic feed into?
Topic B7.1 Cells and Tissues **Topic B8.11 Drugs and Health** **Topic B8.12 Microbes** **GCSE B1 Cells and their specialisation, diffusion, osmosis and active transport.**	• GCSE Units 6 Preventing and treating disease, 7 Non-communicable Disease, 13 Reproduction. • A Level 3 Cell structure, 5 Cell recognition and the immune system
What are the links with other subjects in the curriculum?	**What are the links to SMSC, British Values and Careers?**
• Base the content here on what you already know but there will be time in future to liaise further as part of our collaborative work	• B5 L4 SMSC M
What are the opportunities for developing literacy skills and developing learner confidence and enjoyment in reading?	**What are the opportunities for developing mathematical skills?**
FROM THE LIBRARY Epidemic; Brain ward-614 Fighting infectious disease; Sally Morgan-616 Health and disease; Franklin Watts-301 Plague, pox and pestilence; Kenneth Kipple-616	• Calculating bacterial growth • Surface area

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Biology Scheme of Learning

Year 10 – Term 1

Intent – Concepts

What knowledge will students gain and what skills will they develop as a consequence of this topic?

Know

- State what health is. Describe what pathogens are. Describe that bacteria multiply by simple cell division. State that bacteria divide by binary fission every 20 minutes in the right conditions. State a range of ways to reduce the spread of disease.

Apply

- Know the different causes of ill health. Describe how pathogens cause disease. How to grow an uncontaminated culture of bacteria. Calculate the number of bacteria in a population. Discuss the work of Ignaz Semmelweis.

Extend

- How different diseases interact. Describe how pathogens are spread. Know why bacteria are cultured at a lower temperature in school than in industry. Explain the effect of disinfectants and antibiotics on bacterial growth. Describe the correct usage, limitations and hazards of antibiotic use.

What subject specific language will be used and developed in this topic?

Agrobacterium	Bacteria that infects plants and causes a growth known as a gall. Can be used by scientists to add genes to plant cells (genetic modification)
Antibodies	Chemicals produced by white blood cells which target particular bacteria and viruses and destroy them. Each pathogen requires specific antibodies to destroy it.
Antiseptic	A chemical that kills or destroys micro-organisms.
Antitoxins	Chemicals produced by white blood cells that counteract toxins.
Aphid	An insect pest of plants. They drink sap from plants, reducing the sugar available to the plant. They also carry pathogens that can infect the plant.
Bacteria	Single celled organisms that can live inside other living things and causes diseases.
Chemical Barrier	A defence mechanism in plants, the plant produces chemicals which destroy pathogens.
Chlorosis	The yellowing of plant leaves due to magnesium (and therefore chlorophyll) deficiency.
Communicable disease	A disease that can spread from one living thing to another.
Culture	A pure colony of bacteria grown from a single bacterium.

What opportunities are available for assessing the progress of students?

- B5 L3 & 4 practical results

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Diet	The nutrients consumed by a living thing, an important factor in maintaining good health.
Disease	A malfunction of the body.
Disinfectant	A chemical designed and used for destroying micro-organisms.
Fungi	A complex micro-organism, responsible for a few diseases in animals and plants.
Gonorrhoea	A sexually transmitted disease, caused by infection with bacteria.
Health	The state of physical and mental well-being.
HIV	A virus that causes AIDS.
Hygiene	The use of techniques to reduce or prevent infection by micro-organisms.
Immune System	The body's internal defences against infections.
Incubation	Growing micro-organisms at a particular temperature.
Infection	An invasion of the body by a pathogen.
Interaction	The way in which different factors together affect health.
Malaria	A disease caused by a protist pathogen.
Measles	A viral disease which can be fatal, most children are protected by vaccination.
Mineral Deficiency	The lack of a nutrient or nutrients in the soil a plant is growing in, these usually cause the plant to grow poorly.
Non-communicable disease	A disease caused by lifestyle and/ or genetic factors rather than by a pathogen.
Pathogen	A micro-organism capable of causing a disease.
Physical Barrier	A layer of a living organism that prevents pathogens from gaining entry into the organism.
Protist	A complex, multicellular micro-organism.
Rose Black spot	A fungal disease of plants.
Salmonella	A bacterial disease, a form of food poisoning.
Tobacco Mosaic Virus	A viral disease that destroys the leaves of plants, reducing photosynthesis.
Toxin	A chemical produced by a bacterium that acts as a poison in an infected host.
Vaccine	An injectable medicine that triggers an immune response to prevent infection by a pathogen
Vector	An animal that helps transmit a pathogen from host to host.
Virus	A non-living pathogen, these infect and destroy living tissue.
White Blood Cell	The blood component responsible for defence against pathogens.

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Intent – Concepts

Lesson title	Learning challenge	Higher level challenge	Suggested activities and resources
B5 L1 Health and Disease	Can I state what health is?	Can I explain how different diseases interact?	
B5 L2 Pathogens and disease	Can I describe what pathogens are?	Can I describe how pathogens are spread?	
B5 L3 Growing bacteria in the lab	Can I describe that bacteria multiply by simple cell division?	Can I explain why bacteria are cultured at a lower temperature in school than in industry?	
B5 L4 Preventing bacterial growth	Can I state that bacteria divide by binary fission every 20 minutes in the right conditions?	Can I explain the effect of disinfectants and antibiotics on bacterial growth?	
B5 L5 Preventing infections	Can I state a range of ways to prevent the	Can I describe the correct usage, limitations and hazards of	

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	spread of disease?	antibiotic use?	