Lesson plan B1.3 Infectious diseases

Time: 1 hour **APP ref(s): AF 1/3, 1/4, 4/1, 4/2, 4/3, 4/4, 5/1**	**Book links: Page 18** **Specification links: B1.1.2 a, b, f**
Lesson objectives: • State that micro-organisms that cause infections are called pathogens. • Know that bacteria and viruses reproduce rapidly inside the body. • Know that some bacteria produce toxins. • Know the contribution made by Semmelweis to infection control.	**Previous knowledge required:** KS3: • Microbes and disease • Cells
Key words: Micro-organism, pathogen, bacteria, virus, toxin	**Controlled Assessment:** SA4.1.1; SA4.1.2; SA4.1.3; SA4.2.1

Starting off (15 minutes)	**Resources required**
1 Show Presentation (IB1.3.1) *Lesson objectives*. A Presentation with the images from the Student book (IB1.3.2) is also available. **2** Discuss students' perceptions about bacteria, viruses, pathogens, and infectious diseases. Introduce the term pathogen and explain the difference between bacteria and viruses. **3** Show Interactive (IB1.3.3) *Pathogens*, which links types of pathogen such as fungi, bacteria, viruses, and protozoa with examples of the diseases they cause.	Presentations IB1.3.1, IB1.3.2 Teacher and technician notes TB1.3 Interactive IB1.3.3
Main ideas (40 minutes)	
4 Show the students agar plates before inoculation and after swabs of various surfaces have produced bacterial growth. **5** Student activity (AB1.3.1) *Inoculating agar plates*. Demonstrate a sterile technique to grow pure cultures of bacteria on agar plates. Students then try the technique for themselves.	Teacher and technician notes TB1.3 Student activity AB1.3.1

6 On some of these plates, place a disc of filter paper soaked in alcohol hand gel/rub to see the effect on the growth of bacteria. **7** Discuss the use of alcohol hand gel in hospitals to prevent the spread of disease with reference to the work of Semmelweiss. Homework task (HB1.3.1) *Ignaz Semmelweiss* covers his work in more detail.	Homework task HB1.3.1
Plenary (5 minutes)	
8 Students answer questions A–B and 1–4 on pages 18–19 of the Student book. **9** Show Video (IB1.3.4) *Spread of cholera* on the spread of major diseases, using the example of cholera spreading due to poor hygiene practices.	Student book Video IB1.3.4
Differentiation/Extension • Extension: More-able students could find out how Louis Pasteur helped our understanding of the cause of infectious diseases.	
Homework opportunities • Students complete Homework task (HB1.3.1) *Ignaz Semmelweiss*. Using the Internet and books, they find out who Ignaz Semmelweiss was and how he helped reduce the spread of infections in hospitals.	Homework task HB1.3.1
Checkpoints • Prepare agar plates in advance. Technicians can swab surfaces and grow bacteria on sealed plates for students to examine without removing lids. Bacteria on the plates can be killed before students examine them. See Teacher and technician notes (TB1.3) Infectious diseases. • Observe the usual safety measures for practicals involving microbes.	