

Teaching ideas for Chapter 6, *Human health and physiology I*

Both SL and HL students are likely to have a basic knowledge of human physiology from previous studies and courses so it is a good idea to build on this knowledge. HL students will need a sound knowledge of the basics for Chapter 11, *Human health and physiology II*, and SL students who study Options A, B or E will also need to be secure in all aspects of this topic.

Practical activities

- Ask students to produce a ‘to scale’ paper model of the intestine and compare the relative lengths of each section. Encourage discussion of the function and importance of each section and relate this to the conditions found in it (this can be linked to practical work on enzymes).
- Some good video clips of the system and its processes can be found at:
www.bbc.co.uk/learningzone/clips/the-digestive-system/4180.html
- Supply students with a set of cards that name the structures of the heart and circulatory system. Ask them to put the cards in the correct order to show all the structures a blood cell would pass on one complete circulation. A simulation of the heart functioning, which can be used to introduce the exercise, is available at:
www.bbc.co.uk/learningzone/clips/hearts-and-how-to-keep-them-healthy/1466.html
- Provide an image of the blood, or ask students to find one and make a scale drawing of all the components they can see. They should demonstrate the proportions of different cell types and be able to summarize the components present.
- Lead a class discussion on the benefits of antibiotics. Students should research some history of antibiotics, including their discovery and early use. They can provide examples of diseases that have been controlled by antibiotics and consider the potential threat posed by their overuse and increasing resistance to them.
- Show students the heart and lungs of a sheep, if available, and ask them to consider how the structure of each is related to its function. Students can compare the properties of heart muscle with the diaphragm and other muscles found in the body. They can weigh similar volumes of heart and lung tissues and relate the differences to their structure.
- Encourage students to distinguish between breathing (ventilation) and respiration, and consider how the processes are changed during exercise or in different environments. They can also consider these processes in different organisms.
- Provide students with the opportunity to conduct practical work on the speed of transmission of nerve impulses (see Teaching ideas for Option E, Neurobiology and behaviour). This provides useful reinforcement of the neural pathway and enables students to consider the importance of myelination in increasing the speed of transmission of impulses.
- Ask students to predict the hormonal cycle of an animal such as a sheep, which does not have a menstrual cycle but comes into season at specific times of the year. Contrast this with the human situation, comparing the levels of hormone in each case.

Links to TOK

- Students can consider the risk-taking behaviour associated with the transmission of HIV, including cultural aspects of different societies and the consequences for local economies. News items on this topic are available at www.bbc.co.uk.
- IVF involves the injection of hormones into a woman’s body and manipulation of sperm and egg cells. Students can discuss the risks and benefits of this treatment and the ethics of selecting specific embryos for implantation or destruction.



Links to ICT

- Encourage students to design their own experiments involving enzymes. They can consider the different pH requirements for mouth, stomach and small intestinal enzymes. Data loggers can be used to monitor pH.
- Alternatively colorimeters can be used to monitor the digestion of starch by amylase.
- Data loggers can be used to monitor both heart and breathing rates. Students can design investigations that consider the effect of exercise on both. If a gym is available, the level of exercise can be controlled. (Safety note: students with respiratory or other health problems should not be subjects in these investigations.)

Aspects of internationalism

- Discussion of antibiotic use can include its worldwide significance.
- Type II diabetes is increasing worldwide and the factors influencing its occurrence can include both genetic differences between ethnic groups and the type of diet. Students can examine the distribution of type II diabetes and explore aspects of traditional and modern diets.
- Cultural and religious acceptance of IVF treatment varies considerably across the world. Students can consider their own opinions about the production of children in this way.