SNC2D
BIOLOGY

TISSUES, ORGANS & SYSTEMS OF …

- Introduction
  (P.2-5)

Cancer & the Sun

According to the Canadian Cancer Society, skin cancer is the most commonly diagnosed type of cancer in Canada. One of the causes of skin cancer is excessive exposure to the ultraviolet (UV) radiation from the Sun. You can reduce your risk by blocking the radiation either physically or chemically. Physical barriers, such as long sleeves, a hat, and zinc oxide sunblock, prevent UV radiation from getting to your skin.

Cancer & the Sun

A chemical sunscreen absorbs part of the UV radiation so that it is less damaging. You may have used sunscreen with a Sun Protection Factor (SPF) rating of 15, 30, or even higher. How long does it take for your unprotected skin to begin to burn? Multiply that number in minutes by the SPF rating. The resulting number is the number of minutes that the sunscreen will protect you.

Cancer & the Sun

For example, imagine that you normally begin to burn in 15 minutes and you apply a sunscreen with SPF 30:

15 min x 30 = 450 min

In this case, you would be protected from burning for about 450 min (or 7.5 hours).

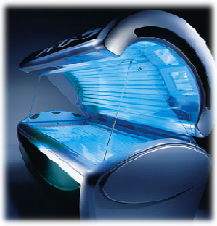
Cancer & the Sun

NOTE!

Even though the sunscreen protects you for a long time, you still need to be careful. Some sunscreens wash off in water or if you sweat, and should be reapplied frequently. Sunscreens are a good example of chemicals that can improve human health.

Cancer & the Sun

Cancer causing UV rays are also produced by tanning beds. But it easy to avoid these type of rays.



Overall Expectations

By the end of this course, students will:

1. evaluate the importance of medical and other technological developments related to systems biology, and analyse their societal and ethical implications;
2. investigate cell division, cell specialization, organs, and systems in animals and plants, using research and inquiry skills, including various laboratory techniques;
3. demonstrate an understanding of the hierarchical organization of cells, from tissues, to organs, to systems in animals and plants.

Big Ideas

Concepts that students should retain long after this course are:

- Plants and animals, including humans, are made of specialized cells, tissues, and organs that are organized into systems.
- Developments in medicine and medical technology can have social and ethical implications.

Getting Started: Useful Concepts & Skills

CONCEPTS REVIEW

1. Draw in your notebook the animal cell shown. Label the following structures and write a brief description of each: nucleus, cell membrane, vacuole, cytoplasm.

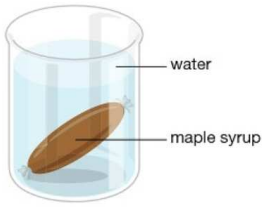
Getting Started: Useful Concepts & Skills

CONCEPTS REVIEW

2. A membrane sac is filled with maple syrup. It is then placed in a beaker of water as shown.

NOTE!

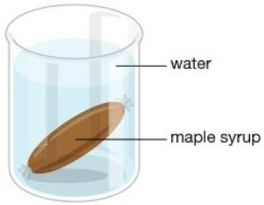
The membrane only allows water to pass through.



Getting Started: Useful Concepts & Skills

CONCEPTS REVIEW

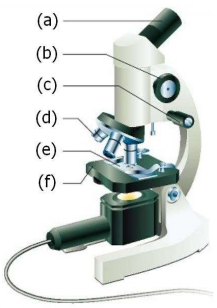
2. (a) Will the size of the membrane sac increase or decrease? Explain.
   (b) Will the water change colour? Explain.
   (c) Will the syrup change colour? Explain.



Getting Started: Useful Concepts & Skills

SKILLS REVIEW

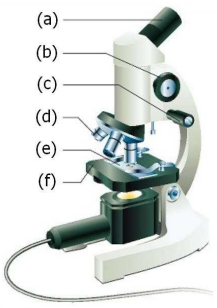
3. Look at the labelled illustration of a light microscope. Use the following terms to identify the parts marked (a) to (f):
   - stage
   - eyepiece
   - objective lenses
   - fine-adjustment knob
   - coarse adjustment knob



Getting Started: Useful Concepts & Skills

SKILLS REVIEW

4. Consider the light microscope again.
   (a) Describe the proper way to transport or carry a microscope.
   (b) Which objective lens should you use to start viewing a slide on a microscope?
   (c) Which objective lens should be in position over the stage when putting away a microscope?



Getting Started: Useful Concepts & Skills

SKILLS REVIEW

5. What are wet- and dry-mount microscope slides?

when the specimen is prepared with/without the aid of a liquid

Getting Started: Useful Concepts & Skills

SKILLS REVIEW

6. What is staining?

similar to a wet mount except a stain is used (i.e. iodine for plants and methylene blue for animals)

Getting Started: Useful Concepts & Skills

SKILLS REVIEW

7. What is a scientific drawing?

a drawing of the specimen using a set of specific criteria

NOTE!

Refer to the Skills Reference section of your text (P.542-545) for more information about:

- using the microscope (handling/storing)
- microscope skills (preparing wet/dry mounts)
- scientific drawings (making/checklist)

Activity: Reviving a Killer (P.4)

ISSUE

During the Spanish flu pandemic, health officials attempted to prevent the spread of the disease by placing sick people in quarantine. What are some of the political, economic, social, and ethical issues associated with using quarantines?

INSTRUCTIONS

A. Read the article "Reviving a Killer".
B. As a class answer/discuss Q.1-8/P.5