

## Zoom in on microorganisms

**Clients:** 10 years and up

### Type of resource

Virtual exhibition to discover in class or at home; in a group or alone.  
Requires speakers and Flash software (can be downloaded free of charge).

### Objectives

- Transmit the keys to understanding microbiology
- Explain that only a small percentage of microorganisms are pathogenic
- Explain the benefits of microorganisms
- Explain which microorganisms are infectious, how the immune systems fights against them, and the reinforcements of modern medicine
- Explain which biotechnologies involve microorganisms
- Explain the genetic manipulations of microorganisms used to produce goods

### Description of the virtual exhibition

*Zoom in on microorganisms* allows the students to learn about the fascinating world of microorganisms. This virtual exhibition is organized into 5 thematic areas.

- the microscopic world,
- useful microorganisms,
- harmful microorganisms,
- biotechnologies,
- genetic engineering.

Various visual aids (photos, illustrations, video sequences, and animations) are used in each area to present the world of microorganisms.

All the animations and video sequences in the 5 thematic areas of *Zoom in on microorganisms* can also be found in the menu of the resources of the virtual exhibition.

Here is the list of available animations:

#### ***The inhabitants of the human body***

This animation allows the students to discover the microorganisms that inhabit the human body. By hovering over the image of the human body, the student can discover nine sensitive areas, each of which contains a photograph of microorganisms and an explanatory text.



**Le nez et le système respiratoire**  
Le nez et le système respiratoire sont des zones sensibles. Elles contiennent des microorganismes qui peuvent être nocifs. Les cellules immunitaires s'agrippent au mucus nasal. Elles empêchent les microorganismes de pénétrer dans le nez et le système respiratoire. Malgré cela et grâce à leur propriété adhésive, les membres du système respiratoire supérieur sont sensibles.

### ***Our defense against undesirables: the immune system***

This cartoon illustrates the various roles of the components of the immune system. The student can discover what happens when a virus enters his body.



### ***Microbiological picnic***

This animation allows the students discover the foods produced with the help of microorganisms.

By hovering over the image of the picnic, the student can discover seven sensitive areas, each of which contains a photo of microorganisms and an explanatory text.



### ***DNA, RNA, proteins...what are they exactly?***

This animation allows the students to discover the transcription and translation of DNA to proteins. The illustrations represent the main components of a eukaryotic cell.



Here is the list of available video sequences:

- Beer making
- Cheese making
- Kefir making
- Bread making
- Wine making
- Yogurt making

## The virtual exhibition *Zoom in on microorganisms* and education programs

### Quebec

Quebec education program  
Target clientele: secondary

#### Training areas

Science and technology

General training areas	Cross-curricular competencies	Disciplinary competencies	Universe	Concepts prescribed by the program
Media	Using information and communication technologies	Searching for answers or solutions to scientific or technological problems, using scientific and technological knowledge	Living universe Technological universe	Living universe: DNA, the immune system, the human body; Technological universe: biotechnologies
Health and safety	Using the information, solving problems			

### Ontario

*Ontario's curriculum, from grade 1 to grade 8 – Science and technology, revised edition, 2007*

#### Grade 5

The systems of the human body – the immune system

#### Grade 6

Biodiversity

#### Grade 8

The cell

##### Main ideas

The cell is the basic unit of life.  
Healthy cells contribute to a healthy body.

#### Biology, grade 11, pre-collegial course

Microbiology

- demonstrate comprehension of the characteristics of various microorganisms, of their role in the environment, and of their effects on other organisms, including humans.
- explain the importance of microorganisms as they relate to human health and the technological applications in medicine, in industry, and for the environment.