

Grade 8

Optics in research and diabetes

Students will experience the ways in which research labs and hospitals understand diabetes, with a focus on diabetic retinopathy at the cell and tissue level

BIOLab Experiences Diagnose a patient with diabetic retinopathy using questioning and simulated urinalysis, examine nervous system tissues under the microscope, examine a pig eye with a focus on the retina.

Time required
Half day (2h)

Grade 8 students receive an introduction to cells and disease in the Cells and Systems cluster, and the Optics cluster involves a study of the human eye. The BIOLab can show students the medical and research connections between these concepts through a study of diabetic retinopathy at the cell, tissue and organ level. We will also examine the use of optics in a hospital and research lab.

Specific Learning Outcomes Addressed

What students will experience in the BIOLab

8-2-01	Use appropriate vocabulary related to their investigations of optics.	Meet scientists, discuss the relevance of optics and light in research and medicine, and examine a diabetic patient case in relation to vision deficiencies caused by diabetes.
8-2-08	Provide examples of technologies that use electromagnetic radiation, and describe potential positive and negative impacts of their uses.	Observe medical images representing different technologies (x-rays, CT, PET) and microscope images from fluorescent microscopes.
8-2-12	Investigate to determine how light interacts with concave and convex mirrors and lenses, and provide examples of their use in various optical instruments and systems.	Use light and phase-contrast microscopy to view tissues and live cells in culture.
8-2-13	Demonstrate the formation of images using a double convex lens, and predict the effects of changes in lens position on the size and location of the image.	Use light microscopes with tissue samples to examine scale and magnification.
8-2-14	Compare the functional operation of the human eye to that of a camera in focusing an image.	Dissect a pig eye to observe the cornea, lens and retina in relation to disease and medical research.



Hôpital St-Boniface Hospital

RECHERCHE • RESEARCH

Youth BIOLab Jeunesse