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 and eye anatomy.

Activity: Explore a mock patient case to understand symptoms, and diagnostic tests for diabetes. See examples of optics use in research and observe tissue samples under a microscope. Pig eye dissection.

Time required
Half day (2.5h)

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 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 medical research labs from microscopes to bioluminescence.

Specific learning outcomes addressed: 8-1-18; 8-1-06; 8-2-01; 8-2-02; 8-2-08; 8-2-12; 8-2-13; 8-2-14

Time Required	Student Experience
20 min	Introduction to the Research Centre and research interests, connect Research Centre labs to cells and systems and optics topics
10 min	Break for washrooms
30 min	Check out different types of microscopes and view live cells under phase contrast microscope with attention to scale, size, specialization and cell culture techniques. Choose from preserved slides to view tissues under compound light microscopes. 5 groups
15 min	Patient diagnosis activity, understanding differences between type I and II diabetes
1 hr	Participate in a pig eye dissection to observe the cornea, lens, and retina in relation to diabetic retinopathy Group size flexible 2-4 students per group is recommended
15 min	Questions, wrap-up, clean up

times are approximate, and can be scaled to whatever time you have available!