Life Sciences 11

LG 6

Viruses

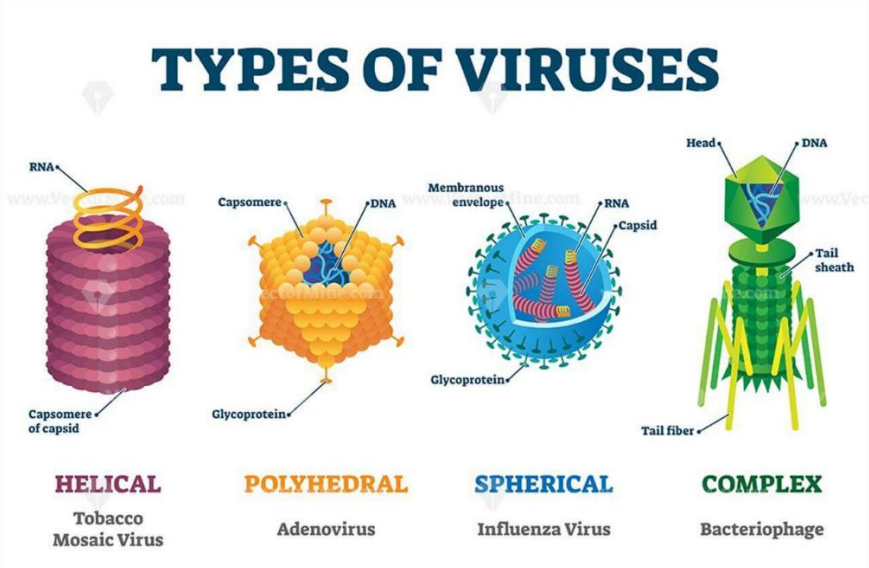
Viruses – Are They Alive? Viruses are fascinating! They blur the line between living and non-living things, challenging our understanding of what it truly means to be alive. In this Learning Guide, you'll explore how viruses work, how they infect cells, and how our bodies defend against them. Through videos, readings, and diagrams, you'll discover how viruses replicate and the role they play in both health and disease. By the end of this unit, you should be able to explain whether viruses are living or non-living and appreciate just how extraordinary these tiny particles really are. The Biology 11 teachers tried to make a joke about viruses… but it **didn't go viral**.

Answer the following questions in your notes or digital document:

1. What Are Viruses?
Read pages 354-360 in your Biology 11 text book**:**
https://www.thssscience.com/resources/Biology%20Miller%20Levine%20Chapter%2017.pdf

A) What is a virus?
B) Draw, label, and describe the parts of a bacteriophage. What is a bacteriophage?
C) How large is a typical virus?
D) Name and describe two methods of viral infection. Include diagrams for each.
E) Are viruses cells? Why or why not?
F) Are viruses living or non-living? Explain your reasoning.

2. Below are 4 main categories of viruses.
A) Research the host cell for each of the 4 viruses listed below.



3. The Cold Sore Virus
Look up and research the Cold Sore Virus and the Lytic & Lysogenic Cycles
Some resources:
https://www.youtube.com/watch?v=67I_AAr2kFI
https://krystalbio11.weebly.com/microbiology.html

A) Explain the difference between the lytic and lysogenic cycles of the cold sore virus.
B) When you have a cold sore on your lip, is the virus in the lytic or lysogenic stage? Why?
C) Find and write the scientific name of the cold sore virus.
D) How is the cold sore virus related to herpes? (HSV-1 vs. HSV-2)
E) How can HSV-1 vs. HSV-2 be transmitted?
F) Describe three ways the human body fights against pathogens.

4. Antibiotics vs. Vaccines
Watch these two TED-Ed videos on YouTube:
How Do Antibiotics Work?" by Kevin W: https://www.youtube.com/watch?v=znnp-Ivj2ek
How Do Vaccines Work?" by Kelwalin D: https://www.youtube.com/watch?v=rb7TVW77ZCs
Then:

A) Explain the main differences between antibiotics and vaccines, include what each one targets.
B) Create a Venn Diagram comparing and contrasting how antibiotics and vaccines work.
C) What is Herd Immunity?

5. Antibodies and COVID-19
Read pages 968-976 in your Biology 11 text book

Watch the video "**Antibodies and COVID-19: Explained"**
https://www.youtube.com/watch?v=fgmhm4IX-M8

A) What is an antibody?
B) When do antibodies appear in your body?
C) How can antibodies tell us if someone has had COVID-19?

6. How Antibodies Work
Resources: **How do Antibodies Work?**
https://www.youtube.com/watch?v=_N1xX49AqwQ
Find a clear diagram online that explains how antibodies function.

A) Draw or recreate the diagram in your notes.
B) Write a short explanation underneath describing how antibodies work and where they come from.

7. Why do we need a flu vaccine every year?
Watch the following video: **Antigenic Drift: How the Influenza Virus Adapts**
https://www.youtube.com/watch?v=tMTl3gU0mFc

A) Explain how the flu viruses can change

8. **Vaccines**
Watch the following videos:
mRNA vaccines, explained
https://www.youtube.com/watch?v=mvA9gs5gxNY

The Side Effects of Vaccines - How High is the Risk?
https://www.youtube.com/watch?v=zBkVCpbNnkU

A) write a sentence explaining one interesting fact you learned from each.