

# Vaccine Preventable Diseases Project

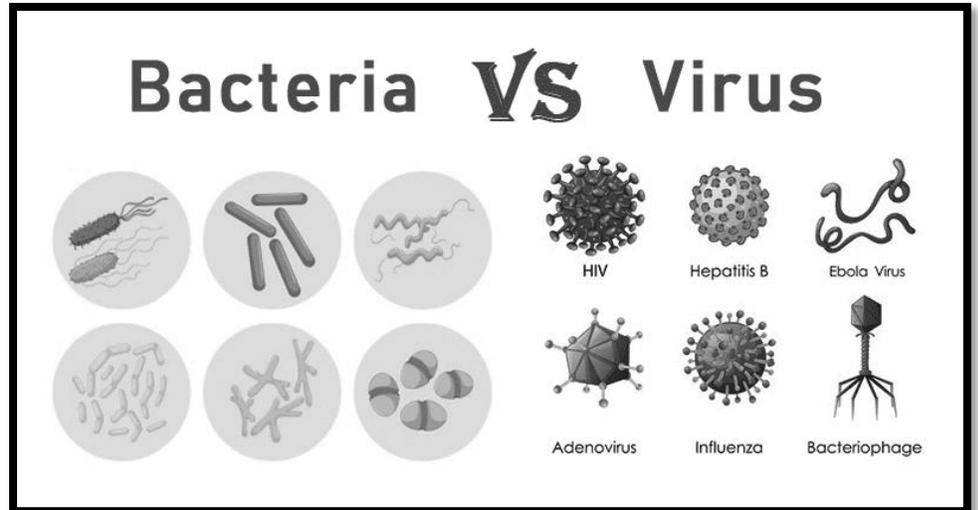
## Bacterial vs Viral Disease Research Poster

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Block: \_\_\_\_\_

**Vaccines** are a stunning scientific achievement and since their introduction, they have protected millions of Americans from deadly infectious diseases such as influenza, pneumonia, cholera, and polio. When individuals choose not to vaccinate, not only do they endanger themselves and their children, but those they encounter on a daily basis. According to the Center for Disease Control, for Americans born between 1994 and 2013, it is estimated **vaccines** have prevented **322 million illnesses, 21 million hospitalizations** and **732,000 deaths** over the course of their lifetimes.

As we age, our immune system weakens, and we become more prone to develop infections or complications from vaccine-preventable diseases. **Immunity** from some vaccines also weaken over time, which means **boosters** are required to maintain protection.

As some bacteria and viruses, such as the flu, evolve over time, making annual vaccinations become necessary.



### The Mini-Project: **BE CREATIVE!**

- You are to design an informational **POSTER** in a group of two for a randomly assigned disease, that answers these essential questions: **How does the human body defend itself against pathogenic bacteria and viruses? Why are vaccines so important.** This project will include research and answering/drawing information about three essential concepts of bacteria and viruses that cause disease. These concepts include information about structure & reproduction, the disease, and defense.

### Define the following:

- Pathogens:** \_\_\_\_\_
- Bacteriophage:** \_\_\_\_\_
- Antigens:** \_\_\_\_\_
- Antibodies:** \_\_\_\_\_
- Immune System:** \_\_\_\_\_
- Immunity:** \_\_\_\_\_
- Homeostasis:** \_\_\_\_\_
- Phagocytosis:** \_\_\_\_\_

# The Concepts & Research:

You poster needs to include the following information. The poster also needs to include colorful pictures and/or drawings:

<p align="center"><b>Concept 1</b> <b>Structure &amp; Reproduction</b></p>	<p align="center"><b>Concept 2</b> <b>Disease</b></p>	<p align="center"><b>Concept 3</b> <b>Defense &amp; Vaccination</b></p>
<ol style="list-style-type: none"> <li><b>Name of your disease</b> caused by a bacterium/virus</li> <li>Sketch of the bacterium/virus and label their key <b>components and structure</b></li> <li>Be able to classify your bacterium/ virus by it's <b>shape or gram stain</b> that caused the disease.</li> <li>Describe the different ways in which the bacterium/virus is <b>classified</b>.</li> <li>Summarize the process by which the bacterium/virus <b>reproduces</b>. <i>Include the process name, the end result, and how genetic variation is introduced.</i></li> <li>Describe the bacterium/virus's <b>life cycle</b>. Lytic vs Lysogenic cycles</li> <li><b>Describe &amp; defend</b> the statement that the bacteria/virus causing the disease is <b>NOT</b> considered a living thing. <b>Give at least three valid points to support your claim.</b></li> <li><i>Be able to make connections between bacteria and their key roles in maintaining stability at a cellular level.</i></li> </ol>	<ol style="list-style-type: none"> <li>Give a <b>brief history</b> of how your disease caused by bacterium/virus was introduced into the population. <i>What does the general population know the disease as?</i></li> <li>Give interesting and <b>informative facts</b> about your disease caused by the bacterium/virus.</li> <li>What are the <b>symptoms</b> of your disease?</li> <li>How is your disease <b>transmitted?</b></li> </ol> <p><b>Answer the following questions: You may answer on a separate sheet of paper.</b></p> <ol style="list-style-type: none"> <li>Describe the different ways disease can be <b>treated and prevented</b> in humans, including vaccinations.</li> <li>Explain how defensive cells like <b>phagocytes</b> and <b>natural killer cells</b> fight infection differently.</li> </ol>	<ol style="list-style-type: none"> <li>Give a <u>detailed</u> timeline of the <b>vaccination development and elimination</b> of the disease.</li> <li><b>Why it is so important to vaccinate</b> against this particular disease and what would happen if people didn't.</li> </ol> <p><b>Answer the following questions: : You may answer on a separate sheet of paper.</b></p> <ol style="list-style-type: none"> <li>Describe how the <b>immune system reacts</b> to the bacterium/virus in the body. <b>[Briefly explain how the body tries to defend the foreign invader]</b></li> <li>Explain the <b>importance of immunity</b> in the effectiveness of vaccinations.</li> <li><b>Explain in as much detail the importance of detection, vaccination, and prevention of certain diseases.</b></li> </ol>