**Name: Vaccines Date:**

**Immune Response**

* The reason you do not get infected with the same virus multiple times is due to your body’s adaptive immune response. Your main defense is your \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which are like \_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ virus.
* After learning the virus structure and how to make antibodies against it, your body creates \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which allow your immune system \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ specific infections and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of antibodies against the infection.

**Vaccines**

* A vaccine is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ measure. They work by triggering your body to start an immune response against a disease before you ever get the disease. The goal is to make you \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the disease so you will never get it.
* A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (a foreign invader such as a virus or bacteria) has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ unique to it called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Antigens (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) are specific to each type of virus or bacteria.
* Once your body has encountered a specific pathogen with antigens on it, it will begin to produce \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to fight the infection.
* The antibodies are highly specific and their shape allows them to attach like a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to specific foreign antigens.
* After the infection is over, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are produced which remember the antigen structure.
* Your body is now immune to getting this same disease again as it is able to recognize the virus or bacteria (by its antigen) and is already prepared to fight with premade antibodies.
* You are protected from future infection! This protection is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a safe way to cause your body to produce \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ against a specific virus or bacteria (by its antigen), protecting you if you ever encounter it. A vaccine essentially teaches your immune system how to fight against specific infections.



**Spread the Word to Protect the Herd!**

* When lots of people in an area are vaccinated, fewer people get sick. Then fewer germs are around to spread from person to person.
* This concept is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, or community immunity.
* When you vaccinate somebody, you protect them from getting infected, but you can also help \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_to other people.
* Herd immunity \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ because their immune system is weak and vaccines might make them sick. This includes babies, people with vaccine allergies, and anyone with an immune-suppressing disease like HIV or cancer.
* Often the people we need to protect with herd immunity are \_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to serious disease.

**Can you …**

… explain what a vaccine is and how they work?

… draw, explain, and differentiate between pathogens, antigens and antibodies?

… explain the concept of heard immunity?