

Activity title: Celebrate Vaccines Word Search

This activity is best done individually

Aim:

To allow people to play with the microscopes and understand that scientists use them to study things which we can't see with our eyes. Introduce key terms and provide an opportunity to ask questions.

Materials:

- Print Celebrate Vaccines word search. Word search can be edited for different age groups and audiences.
- Purchase microscopes from [Amazon](#)

Suggested facilitator script:

Facilitator: Would you like to try our word search? Are you able to see the letters? (No, they're too small) That's right, so we need a microscope to help us see very small things, try using the microscope, can you see the letters now? Great, so let's try and find the words which answer these 3 questions:

1. Immunology is the study of the _____ (immune system)
2. A scientist who specialises in immunology is called an _____ (immunologist)
3. _____ (vaccines) teach the body to recognise and defend itself against infections from harmful pathogens, such as bacteria, viruses and parasites.

Further explanation:

The immune system is a complex system of cells and organs that have evolved to protect us from disease. The function of these components is divided up into nonspecific mechanisms, those which are innate to an organism, and responsive mechanisms, which are adaptive to specific pathogens. Fundamental or classical immunology involves studying the components that make up the innate and adaptive immune system.

Innate immunity is the first line of defense and is non-specific. That is, the responses are the same for all potential pathogens, no matter how different they may be. Innate immunity includes physical barriers (e.g. skin, saliva) and cells (e.g. macrophages, neutrophils, basophils, mast cells). These components 'are ready to go' and protect an organism for the first few days of infection. In some cases, this is enough to clear the pathogen, but in other instances the first defense becomes overwhelmed and a second line of defense kicks in.



Adaptive immunity is the second line of defense which involves building up memory of encountered infections so our immune system can mount an enhanced response specific to the pathogen. Adaptive immunity involves antibodies, which target foreign pathogens, such as bacteria and viruses, roaming free in the bloodstream. Also involved are T cells, which can directly kill infected cells or help control the antibody response.

An immunologist is a scientist and/or doctor who specialises in immunology. Many immunologists work in a laboratory focusing on research, either in academia or private industry (e.g. in the pharmaceutical industry). Other immunologists – “clinical immunologists” – are doctors who focus on the diagnosis and management of diseases of the immune system, such as autoimmune diseases and allergies.

Vaccines teach the body to recognise and defend itself against infections from harmful pathogens, such as bacteria and viruses. Vaccines provide a sneak 'preview' of a specific pathogen, which stimulates the body's immune system to prepare itself if infection occurs. Vaccines contain a harmless element of the pathogen that stimulate the immune system to mount a response, beginning with the production of antibodies. Cells responsive to the vaccine proliferate in order to manufacture specific antibodies and to form 'memory cells'. Upon encountering the pathogen a second time, these memory cells are quickly able to deal with the threat by producing sufficient quantities of antibody. Pathogens inside the body are eventually destroyed, thereby thwarting further infection and preventing you from feeling unwell.