# Types of Vaccines[1]

## Whole Organism

Whole organism is the first type of vaccine invented. The idea is to expose a healthy individual to a mild form of a disease, allowing the body to generate antibodies. The production of **antibodies** will allow the body to mount a strong defense if it is exposed to the same disease in the future. With this type of vaccine, the entire disease-causing organism is introduced into the body of a healthy individual. However, it is modified so that it is not as virulent (disease causing) as the original. This modification is often made by using heat or chemicals. If the modification process actually kills the organism, it is considered a dead vaccine (this is how the original polio vaccine was created). If the organism has been weakened, but not completely killed, it is referred to as an **attenuated** virus (such as the common measles, mumps, and rubella vaccine,).

## Partial Organism

A partial organism vaccine is referred to as a subunit vaccine. This type of vaccine contains only a part of the disease-causing organism. For example, certain proteins are found on the surface of organisms; it is those proteins that antibodies recognize. If only the surface proteins are introduced into a healthy individual, the body is essentially "'tricked" into making antibodies, even though the actual disease-causing organism is not present.

## Recombinant Vaccine

Recombinant vaccines are similar to subunit vaccines in that they "trick" the body into thinking it is being invaded by a specific microorganism. The body then responds by producing antibodies against that organism. However, no actual parts of the disease-causing organism are injected. Instead, genes that code for the proteins made by disease-causing organisms are injected. The genes then produce the proteins, triggering the body's immune response. The vaccine for hepatitis B is an example of a recombinant vaccine.

**Endnotes:**

1. "Understanding Vaccines," National Institute of Allergy and Infectious Diseases, 2008, www3.niaid.nih.gov/healthscience/healthtopics/vaccine/PDF/undvacc.pdf.