

It's weird to hear the word "creative" inside a science conversation nowadays. Creativity is something that humans wrongly link with arts: painting, photography, graphic design... We forget that creativity is there every time something new is invented or discovered. Creative minds can help in different ways of solving a math problem, creating theories, discovering new elements... or even creating vaccines. *"Scientists are building explanatory structures, telling stories which are scrupulously tested to see if they are stories about real life"* – Peter Medawar. I found this sentence interesting and factual. Here, Medawar is saying that scientists "tell stories" in the way that data and math are pieced together in order to create an explanation. Without creative minds in science, a lot of the progress would be nonexistent.

Creativity in fields like science have brought society advancements like phones, satellites, radios, fire, the wheel, etc. Those advances go from the invention/discovery of fire until the latest Tesla, and it's a fact that humanity keeps evolving thanks to creative minds and work of previous scientists. Advancements in chemistry, for example, helped society to progress: law of gasses, polythene, screens... But if one field in science has helped humanity the most it is medicine. Scientists with amazing creative minds, such as Alexander Fleming (inventor of penicillin), made and are making huge advancements to help people survive illnesses and make life easier. Some of the most important advancements in medicine could be Anesthesia (1846), created to block the nerves in a certain section of the body during an intervention, or Vaccines (1796), where the Dr. Edward Jenner demonstrated that an infection with a small piece of Cowpox virus conferred immunity against that same virus to the carrier of that infection.

This vaccination method was a revolutionary invention. Thanks to vaccines, viruses like the smallpox (On December 13, 2019, the WHO celebrated the 40th anniversary of its eradication) were eradicated. This was amazing, but a lot of contagious illnesses were still out there, and the development of vaccines was weak. In the spring of 1963, the US Food and Drug Administration (FDA) granted the first license for a measles vaccine, and Dr. Hilleman started his work to make those vaccines better. More than 40 vaccines are attributed to him, which include: measles, mumps, hepatitis A, hepatitis B, chickenpox, meningitis, pneumoniae, and *Haemophilus influenzae*. He said that his best work was the hepatitis B vaccine, and that he was really proud of it. Dr. Hilleman was awarded with the *National Medal of Science* and is considered the scientist who saved more lives in the twentieth century than anyone else. Mumps vaccine was created because his daughter, Jeryl Lynn was diagnosed it, and Dr. Hilleman created a vaccine from the culture of the virus.

The way Dr. Hilleman discovered most of his vaccines was spontaneous or in a really smart and creative way. The Hepatitis B vaccine, for example, was created using pepsin, urea and formaldehyde. Thanks to his intelligent, creative mind, the vaccine was replaced in 1986, by a new one created with yeast. Who would have thought that an ingredient used to make bread, would help with the creation of a vaccine that helped millions of people. Only an incredible, creative mind like Dr. Hilleman's one could have discovered such a unique way to resolve a problem. That's the reason why his creative mind helped prove that creativity is not only an artistic characteristic, but being creative in fields like science can save lives.

