

# Maurice Hilleman



*Measles and mumps and rubella, oh my!*



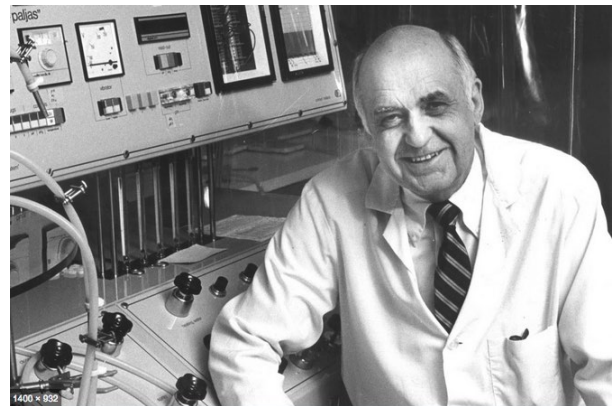
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**V**accinations have drastically improved the quality of life for humans and animals, eliminating or preventing disease that once ravaged populations. As infants, we receive standard immunizations that help protect our fragile bodies from potentially deadly viruses and bacteria. Have you ever wondered who was behind the development of these vaccines?

Maurice Hilleman, a name not well known outside of scientific circles, was an American vaccinologist and microbiologist. In his lifetime, Hilleman gifted us with over forty licensed animal and human vaccines. Notable vaccines include measles, hepatitis A, hepatitis B, mumps, chickenpox, *Streptococcus pneumoniae*, *Neisseria meningitidis*, and *Haemophilus influenzae*. These vaccines save nearly eight million lives every year.(1)

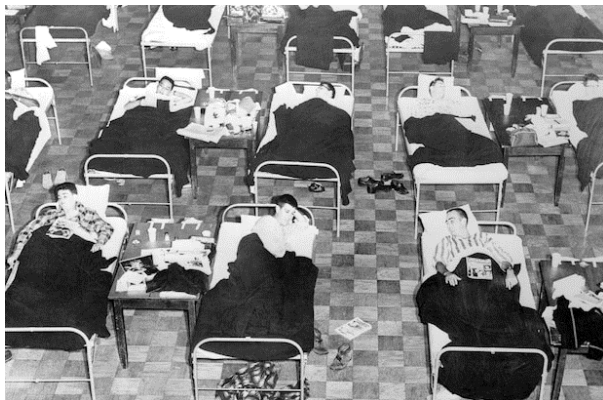


**Figure 1: Maurice Hilleman in his laboratory.**

Hilleman was raised by his uncle on his family's farm in Montana. Despite a modest upbringing, Hilleman would go on to earn his doctoral degree in microbiology from the University of Chicago. His thesis focused on the cause of chlamydia infections, which at the time was thought to be a virus. Hilleman was able to prove that the intracellular bacterium *Chlamydia trachomatis* was the true culprit.(1)

Hilleman developed his first vaccine against Japanese encephalitis (JE) virus at the beginning of his professional career. During World War II, American troops were at risk of infection and Hilleman's vaccine provided critical protection.(1) Shortly after, Hilleman began to investigate influenza at the Army Medical Center where he discovered that mutations of the virus caused genetic changes. Hilleman suspected that these changes, now known as antigenic shift and antigenic drift, would mean that a new vaccine was necessary each year.(2)

In 1957, an outbreak of influenza in Hong Kong alarmed Hilleman. After his previous work with the virus, Hilleman was well aware of the potential for a pandemic. After obtaining a virus sample, Hilleman and his team worked tirelessly to develop a vaccine that would protect against the strain. Forty million doses were distributed, limiting the severity of the US epidemic.(2)



**Figure 2: Students sick with the 1957 Asian flu.**

Hilleman developed a majority of his vaccines while working in vaccine research and development for Merck & Co. In 1963, Hilleman's daughter, Jeryl Lynn, became ill with the mumps. Using virus samples harvested from Jeryl Lynn, Hilleman was able to create an effective vaccine.(3) The same strain taken from Jeryl Lynn is still used today in the MMR (measles, mumps, and rubella) vaccine, the first ever combination vaccine created by Hilleman.(2)

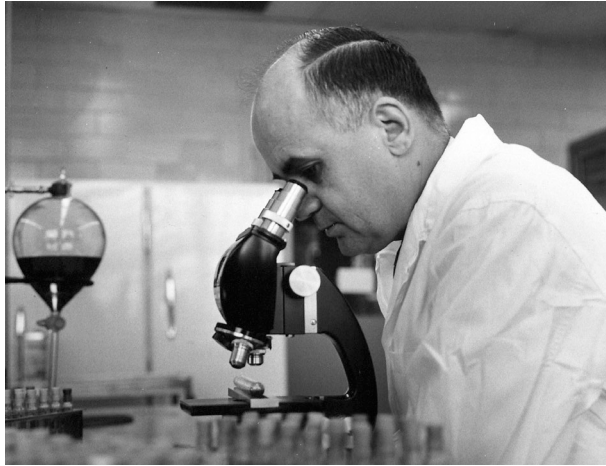


**Figure 3: Jeryl Lynn Hillman, Maurice Hillman's daughter, with a case of the mumps.**

Among Hilleman's many contributions, he considered the hepatitis B vaccine to be his greatest work. Hilleman and his team used pepsin, urea, and formaldehyde to create a safe vaccine from blood serum. Thomas Starzl, a liver transplant pioneer, said "Maurice removed one of the most important obstacles to the field of organ transplantation." The vaccine was eventually replaced by one made with yeast, and by 2003, the incidence of Hepatitis B in the U.S. had decreased by 95% in young people.(1)

Hilleman retired from Merck Research Labs at the mandatory age of 65, but continued to direct the Merck Institute for Vaccinology up until his death in 2005. Despite Hillman's long

list of accomplishments, he declined to name his discoveries after himself.(1) Though Hilleman's name is relatively unknown to the general public, his commitment to vaccine development, immunology, epidemiology, cancer research, and virology, means no life remains untouched by his significant, life-saving discoveries.



## References:

1. [https://en.wikipedia.org/wiki/Maurice\\_Hilleman](https://en.wikipedia.org/wiki/Maurice_Hilleman)
2. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7150172/>
3. <https://hillemanfilm.com/dr-hilleman>