



Impact Statement

Kaylee Zhang, Grade 10

The Father of Modern Vaccines, 2026

Watercolor on paper, 20 x 15 inches

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Unsung Hero: Dr. Maurice Hilleman

"The father of modern vaccines," Maurice Hilleman, earns this title from the over 40 vaccines he developed. Some of the vaccines he made are still routinely implemented in vaccine schedules: measles, mumps, hepatitis A, hepatitis B, chicken pox, *Neisseria meningitidis*, *Streptococcus pneumoniae*, and *Haemophilus influenzae*.

One trait that stands out to me about Dr. Hilleman is his dedication. His childhood took place on a chicken farm in Miles City, Montana. Raised by his uncle, Bob Hilleman, he spent a lot of his youth working in the family farm and thus gained, what he'd call a reason for his success, experience working with chickens. Narrowly making it to college due to economic problems, Dr. Hilleman attended Montana State University and later finished his doctoral degree in microbiology at University of Chicago. In the choice between academia and industry, he chose industry, defending that academia lacked the ability to move scientific innovations forward, desiring work that could be more immediately impactful and could make it into clinical use. He discovered the concept of antigenic shift and drift, advancing the field of research in influenza vaccination. He developed the first vaccine against human cancer, prevented pandemic flu, and more.

While the sheer number of vaccines stood out to me while looking over the list of Unsung Heroes, learning about his pioneering and clear intention to save lives while developing his vaccines really tied it all in. He served in the National Immunization Program, Advisory Committee on Immunization Practices, the NIH's Office of AIDS Research Program Evaluation, and many more committees. It is estimated that the vaccines he developed save ~8,000,000 lives every year. In 1957, he was the first to predict a pandemic in Hong Kong and developed a vaccine for the virus before it even arrived in the United States. He developed the MMR vaccine, which could protect children against measles, mumps and rubella with just one shot, after his daughter contracted mumps. Upon such news, he had isolated the virus himself from her and was then able to develop a vaccine for it, the specific mumps strain of which is now called the Jeryl Lynn strain, after his daughter. While such a style of work was untraditional and his action was something that would require lots of formal consent and ethical oversight beforehand nowadays, at the time, it showed his sense of urgency and commitment to helping others. Post-retirement, which had been mandatory at 65 at the time, Dr. Hilleman continued his work by helping consult and supervise those still working on infectious diseases. At one point,

he served as an advisor for the World Health Organization. His commitment to help others, working on the cause and saving lives in general is something that really inspires me.

In my artwork, I drew Maurice Hilleman looking through a microscope at a culture of cells in a T75 flask, pink liquid being media, and him in another image looking at an agar plate. In the background, I tried to include many different bacteria and viruses, such as a rendition of S.V.40 (Simian virus 40), a virus found in monkeys that Dr. Hilleman suggested could contaminate vaccines. Additionally, I included colored versions of the eight viruses I mentioned beforehand. I wanted to portray the viruses and microorganisms in a colorful, vibrant, and more artistic manner, and from a microscopic view. I also included, near the bottom right side of the microscope, an image of a culture of leukocytes (white blood cells). I chose watercolor as my medium because I felt like it could illustrate the bacteria and viruses in a more artistic way and get that sort of layering you'd see in a slide of cells looking through a microscope.

Reading about Dr. Hilleman and his research advancements is something that has really inspired me and taught me about the dedication one can have for their field. While he was depicted as 'impatient and pushy' by some of his lab mates and did have an unconventional approach for the development of vaccines such as mumps, I find his advancement through life, from working on a farm and barely affording college to becoming such an influential figure in the field of virology, a reminder of how one can achieve great things if they truly desire to do so. Additionally, his development of so many vaccines illustrates a sense of rigor and great productivity that I'd like to develop as well. While I have not gone about sharing my artwork with others in my community, I think it'd be very interesting to branch out and continue learning about other researchers that are unfamiliar to the public as well—it was really interesting learning about Dr. Hilleman's life and feats—and developing artworks for them as well.