THE IMMUNIZATION PARTNERSHIP

Vaccine Development: MMR and MMR-II

Timeline:

- **1963:** The **first measles** vaccine was licensed, based on research by **Dr. John Enders**. This vaccine used a live attenuated virus and was initially paired with **gamma globulin** to reduce side effects like fever and rash. Gamma globulin was used to improve safety and effectiveness until further refinements were made.

- **1967: Dr. Maurice Hilleman** at Merck developed a **further-attenuated measles vaccine** that no longer required gamma globulin. This new formulation, based on the **Edmonston-Enders strain**, became the standard measles vaccine, offering safer and more effective protection, and it remains in use today.

- **1967:** The **first mumps vaccine** was licensed by Merck, developed by **Dr. Maurice Hilleman**. It used the **Jeryl Lynn strain** (named after Hilleman's daughter, from whom the virus was collected). This vaccine proved effective and remains in use today.

- **1969**: After the U.S. rubella epidemic of 1964–65, which led to **20,000 cases of congenital rubella syndrome (CRS)** and 20,000 fetal deaths, **three rubella vaccines** were licensed:

    - **Mervaux** (produced in duck embryos, developed by Hillerman)
    - **Rubelogen** (produced in dog kidney cells)
    - **Cendevax** (produced in rabbit kidney cells)

- **1971: Dr. Maurice Hilleman** combined the **measles, mumps, and rubella vaccines** into one combined vaccine, the **MMR vaccine**, which offered protection against all three diseases in a single shot. The combination vaccine drastically reduced missed doses and improved immunization rates, contributing to a significant decrease in disease spread.

- **1979**: The rubella strain in the MMR vaccine was updated to use a more effective strain developed by **Dr. Stanley Plotkin** at the Wistar Institute. This updated vaccine, **MMR-II,** replaced the original MMR vaccine and became the standard version used in the U.S.

- **2004: Rubella was officially eliminated from the United States** due to the widespread use of the MMR vaccine. However, rubella remains a global health issue, with significant rates of congenital rubella syndrome in other parts of the world, especially Southeast Asia and Africa.

Sources: https://vaxopedia.org/2019/04/07/whats-the-difference-between-the-mmr-and-mmr-ii-vaccines/
https://www.si.edu/spotlight/antibody-initiative/mmr#ogmt-edan-search-results