**Martha Crawford, Year 7**

The smallpox vaccine was the first vaccine to be developed against a contagious disease.

The earliest evidence of skin lesions resembling those of smallpox is found on the faces of mummies from the 18th and 20th Egyptian Dynasties (1570-1085 BC) but it is believed smallpox first appeared around 10,000 BC at the time of the first agricultural settlements in north eastern Africa. Smallpox was introduced to Europe sometime between the fifth and sixth centuries and was later brought to the New World by Spanish and Portuguese conquerors, where it destroyed the native populations.

Smallpox was a highly infectious disease that was endemic around the world. The disease began with a fever and a red rash that spread all over the body. After a few days the rash turned into opaque pustules that formed scabs. The scabs fell off, often leaving deeply pock-marked skin. In about 5–10% of cases (72% among children) a serious case of smallpox was fatal.

One of the first methods for controlling smallpox was variolation, a process named after the virus that causes smallpox (variola virus). During variolation, people who had never had smallpox were exposed to material from smallpox sores (pustules) by scratching the material into their arm or inhaling it through the nose. After variolation, people usually developed the symptoms associated with smallpox, such as fever and a rash. However, fewer people died from variolation than if they had acquired smallpox naturally. The idea had been brought to Britain from Turkey in 1721 by Lady Mary Wortley Montagu.

English doctor, Edward Jenner, began creating the smallpox vaccine in 1976. Edward had observed that milkmaids, who often contracted cowpox, seemed immune to its much deadlier cousin, smallpox. Jenner knew about variolation and guessed that exposure to cowpox could be used to protect against smallpox. Using careful scientific methods Jenner investigated and discovered that it was true; people who had cowpox did not get smallpox. To test his theory, Jenner infected James Phipps, the eight-year-old son of his gardener, with cowpox using the pus from gathered from the blisters of Sarah Nelmes, a milkmaid who caught the infection from a cow called Blossom. After a mild fever and the expected local lesion James recovered after a few days. About two months later Jenner inoculated James on both arms with material from a case of smallpox and discovered that he did not contract this disease. The boy was immune to smallpox

In 1801, Jenner published his written work “On the Origin of the Vaccine Inoculation.” In this work, he summarized his discoveries and expressed hope that “the annihilation of the smallpox, the most dreadful scourge of the human species, must be the final result of this practice.”

Jenner called his procedure ‘vaccination’ after the Latin word for cow (vacca). There was some opposition to his findings, but the vaccination soon replaced the riskier variolation. The smallpox vaccine was administered in a unique way. A drop of the vaccine virus (called vaccinia) was placed on the upper arm. The drop was then inoculated into the skin using a two-pronged, stainless steel needle. The needle was used to puncture the skin three or 15 times (people getting their first vaccine got three punctures, whereas those getting a booster dose of vaccine received 15 punctures). The vaccination often caused a lifelong scar.

In 1853, 30 years after Jenner’s death, smallpox vaccination was a standard practice for preventing smallpox. After a global programme of mass vaccination, and almost two centuries after Jenner hoped that vaccination could overcome smallpox, the last naturally occurring case of smallpox was recorded in Somalia in 1977. The 33rd World Health Assembly declared the world free of this disease on May 8, 1980. Many people consider the elimination of smallpox to be the biggest achievement in international public health. Smallpox is the only human disease to have been wiped out by vaccination.