

## Development of the Smallpox Vaccine

Smallpox was once the most dangerous disease in the world. It killed more people than cholera. Smallpox was spread over a larger geographical area than the bubonic plague, and it remained incurable for longer than yellow fever.

Smallpox is a virus that affected mostly children. It was transmitted through coughing, sneezing, and even touching. Victims developed such symptoms as chills, fever, and a rash. As many as 40 percent of smallpox victims died, and those who did not were often left blind or permanently scarred by the rash.

In 1796, an English surgeon named Edward Jenner decided to test a hypothesis about smallpox. He had heard that farmers became immune to smallpox after they experienced a mild condition called cowpox. Since the farmers worked with cattle, they were often exposed to cowpox, which is spread among cattle.

Jenner tested his immunity hypothesis by taking samples of pus from the cowpox rash and applying it into scratches on a healthy person's arm. Later, he injected the same material into people's skin. Jenner's methods were controversial at the time, and they remained controversial for decades after he began to inoculate people. However, after the success of his project, his methods were copied in different smallpox-infected areas of the world. As more people were inoculated, the number of smallpox cases declined rapidly.

In 1967, the World Health Organization (WHO) started a campaign to end smallpox all over the world. WHO teams were sent to countries where no one had ever received smallpox vaccines, and they administered a modern form of Jenner's inoculation. In 1978, the last known case of smallpox was documented in Somalia. This led to a declaration in 1980 by WHO that the disease had been completely eradicated from the human population. Although the virus in the wild may have been eliminated, cultures of the smallpox virus were retained in laboratories. Some fear that the disease will be revived through terrorist use of such cultures of the virus.

**Evaluation** *On a separate sheet of paper, answer the following questions.*

1. Write a paragraph explaining why Jenner's research methods might have been controversial. Then write another paragraph that supports or challenges his methods.
2. Currently, smallpox does not exist in the human population. However, cultures are known to exist in guarded laboratories in the U.S. and Russia. Write a short essay in which you discuss whether you think these cultures should be kept or destroyed.