

Perm State Medical University

# HISTORY OF VACCINATION WITH SMALLPOX

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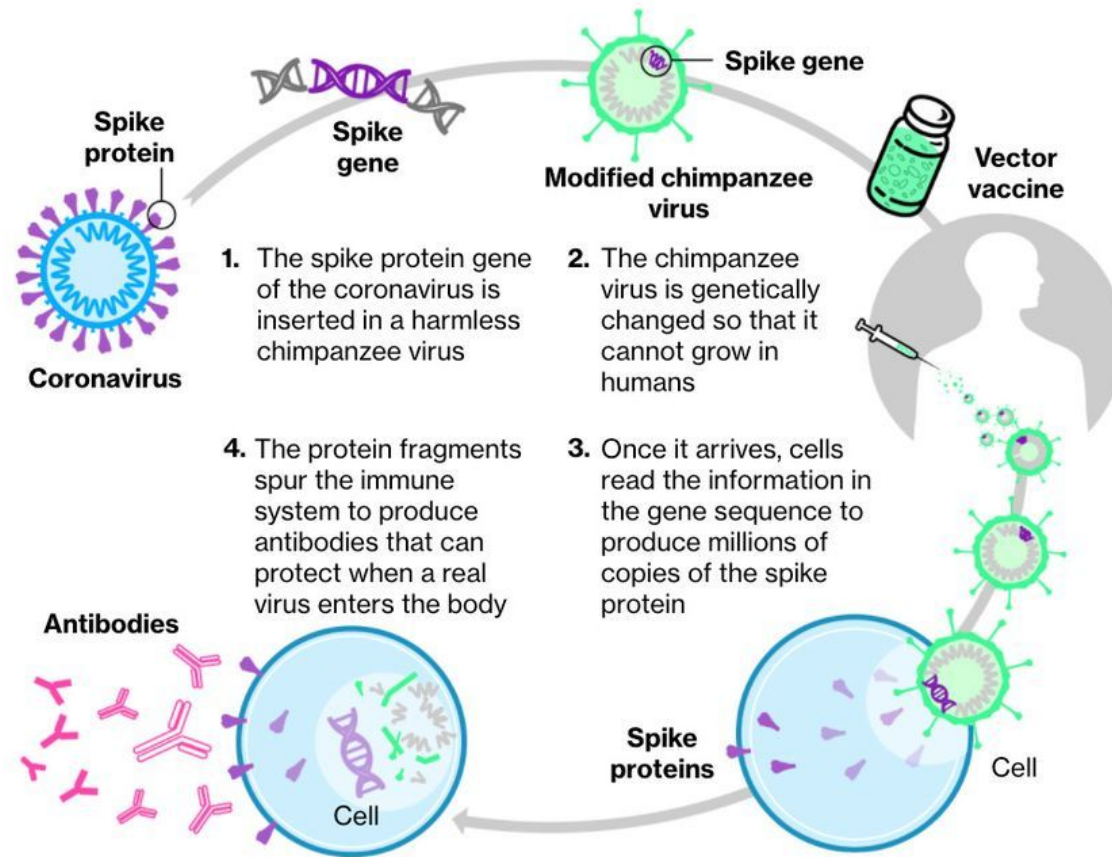
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# WHAT IS VACCINATION?

- Vaccination is a medical technique that uses the body's own immune system to protect it from infectious diseases.



# HOW THE VACCINE WORKS?



## KEY FACTS ABOUT VACCINATION

- Smallpox vaccination is based on a thousand-year old technique called inoculation, in which a small sample of infected matter is deliberately introduced into the body in order to prevent the full disease from developing.
- A vaccine stops you from getting an infectious disease by stimulating your body's immune system to produce chemicals called antibodies that will combat a future infection.
- The first vaccine was developed to protect against smallpox, a deadly disease that killed thousands of people until the 1800s. Thanks to vaccination, smallpox was completely eradicated in 1979.

## KEY FACTS ABOUT VACCINATION

- An antitoxin is a blood-based product that 'borrows' immunity from another person or animal to help you fight an infection, once you already have it.
- The sciences of microbiology and immunology have produced different vaccines and antitoxins to prevent and combat a range of infectious diseases.

# INOCULATION, OR HOW TO USE THE DISEASE AGAINST ITSELF



THE FIRST ATTEMPTS TO PRODUCE IMMUNITY  
ARTIFICIALLY WERE RECORDED IN CHINA  
APPROXIMATELY A THOUSAND YEARS AGO.





## THE PRACTICE WAS CALLED INOCULATION

- Healthy people would inhale a powder made from the crusts of smallpox scabs in order to protect themselves from the disease. They might show mild symptoms, but they were usually resistant to any subsequent exposure.

## ANOTHER VERSION OF INOCULATION

- Another version of inoculation involved inserting powdered scab or pus from a smallpox pustule into a scratch on the skin made by a sharp instrument.

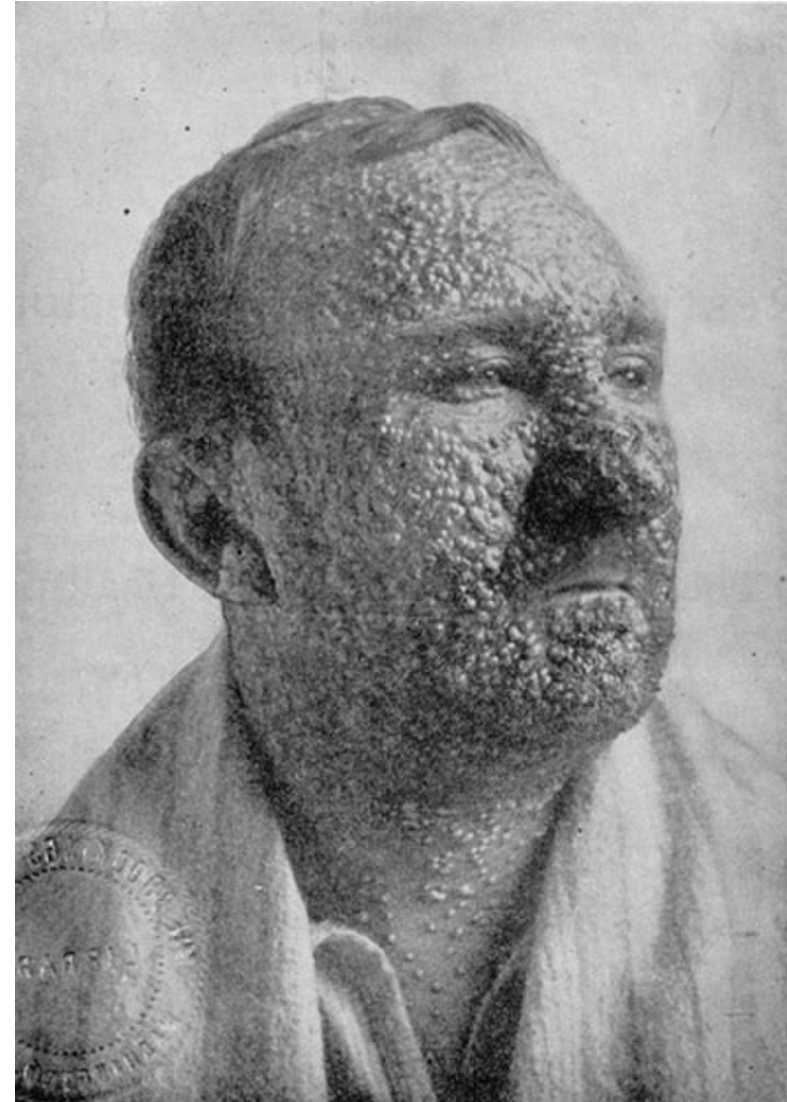


THE ENGLISH  
PHYSICIAN EDWARD  
JENNER (1749–1823).

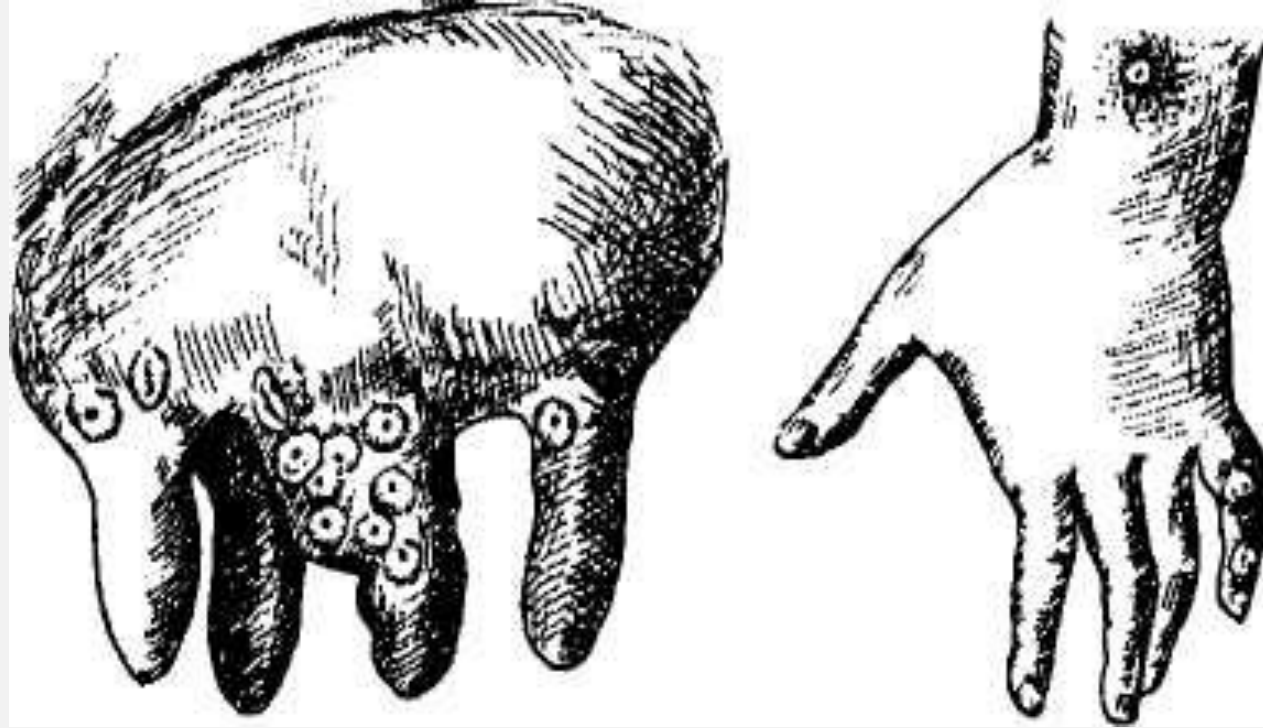


## EDWARD JENNER AND THE SMALLPOX VACCINE

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.



# COWPOX





In 1796 Jenner took some matter from a cowpox pustule on the hand of milkmaid Sarah Nelmes and injected it into the arm of a young boy called James Phipps.

James developed a scab and experienced some soreness and mild fever for a day. Six weeks later, Jenner inoculated young James with smallpox matter and the boy showed no signs of the disease.

Jenner published his findings in a short treatise. He called the procedure vaccination after the Latin word for cow (vacca). Despite some opposition, vaccination soon replaced the riskier variolation and in 1853, 30 years after Jenner's death, smallpox vaccination was a standard practice for preventing smallpox.



## THE SCIENCE BEHIND VACCINATION

- Clinical practice proved Jenner's vaccine successful, but neither he nor anyone else knew why it worked. An explanation had to wait for the science of bacteriology to develop at the end of the 1800s.

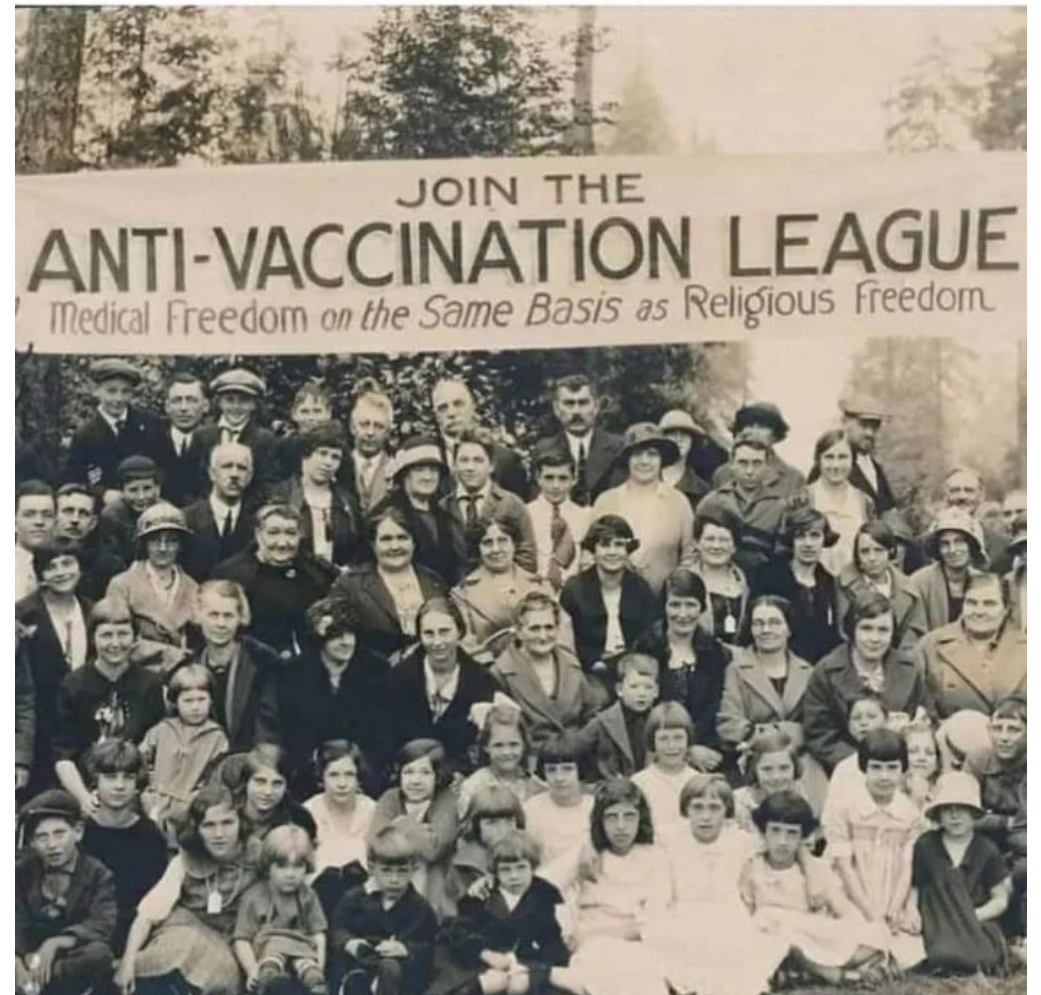
THE FRENCH SCIENTIST LOUIS  
PASTEUR (1822–1895)

He believed that germs (microorganisms) were responsible for infectious diseases such as smallpox. He tested his 'germ theory of disease' on anthrax, an infectious disease of people and animals.





# ANTIVACCINATION LEAGUE



## CONCLUSION

- Summing up I can say that it is very important not to give up on immunization, but together with a doctor to find an opportunity to carry it out if necessary having undergone appropriate training. Vaccination is the most effective way to protect against infectious diseases!

THANKS FOR YOUR ATTENTION!