



# New Research on Smallpox About its Origins

## Why in News

Recently, a new study carried out by an international team of researchers provides fresh insight into the origins of the **Smallpox disease**.

- It suggested that the smallpox was in existence as early as during the Viking age in the **8<sup>th</sup> century CE**.
- The **Viking Age** was the period during the Middle Ages when the Norsemen (name given to the Scandinavian Vikings) undertook colonizing, conquest and trading throughout **Europe, and reached North America in the 9<sup>th</sup> and 10<sup>th</sup> century**.

## Smallpox

- **About:** Smallpox is a contagious disease, caused by the Variola Virus (VARV).
- **Transmission:** It transmits through the droplets released from coughing, sneezing, and face to face contact with an infected person.
- **Eradication:** One of the deadliest diseases known to mankind, it is also the **only one to have been** eradicated by vaccination.
  - In 1980, this was declared as completely eradicated after the global immunization campaign led by the [World Health Organization](#) (WHO) with the help of the smallpox vaccine.
- **Vaccine:** The first effective vaccine was discovered by **Edward Jenner** in **1796**.

## Key Points

- **Origin:** The **origins of smallpox** have always been unclear.
  - Until now, the **earliest** confirmed case of the **disease** was found in the **mummified remains of a 17<sup>th</sup> century Lithuanian child**, even though written records suggest that it is much older.
- **Major Findings:**
  - **Finding Virus Sequence:** The **Variola virus sequence was recovered** from **13 Northern European** individuals **including 11 dated to 600-1050 CE**, overlapping the **Viking Age**.
  - **Pan European Presence:** These sequences, **combined with early written records of VARV** epidemics in southern and western Europe, suggest **a pan-European presence of smallpox** from the late 6<sup>th</sup> century.
    - According to the study, the virus was **circulating among people even earlier**, about 1700 years back at the time when the Western Roman empire declined and people were migrating across Eurasia.

- **Genetic Makeup:** It also suggests that the **genetic makeup of the viral strain recovered from the 11 individuals** is different from the **modern version which was eradicated in 1979-80**.
  - The Viking variant of the virus is part of a previously unknown, and now extinct virus group, or clade.
  - Both the modern smallpox and the ancient variant descended from a common ancestor but diverged 1700 years ago.
- **Course of Evolution:** It was suggested as a benign disease (less dangerous) considering that smallpox may have in the past been a mild.
  - In the **course of evolution**, the **active gene count of the virus** is shown to **have reduced due to mutation**.
  - Therefore, the researchers speculated that **smallpox became more deadly over time**.
- **Implications of the New Research:**
  - **Information about the Viruses:** The results of the study does not have any impact on the current spread of the [Covid-19 pandemic](#). However, it does provide important information on **how a virus may become deadlier over time**.
  - **Trace of History:** Nonetheless, it is important to note that smallpox is the **latest among several other diseases whose history in recent years** have been rewritten by ancient DNA analysis.
    - Earlier, In 2015, a study noted that the [plague](#) that killed millions in medieval Europe can be traced as far back as the Bronze age between 3000 and 1000 BCE.
    - In 2018, on the other hand, [Hepatitis B](#) was seen to have origins in the Bronze age as well.
  - **Ways of Spread:** These findings would help to understand the ways in which diseases have affected human populations in the past.
    - The DNA evidence suggests that diseases such as **plague and hepatitis B** are associated with **major prehistoric migrations** — something that seems now to be true of variola too.
    - It would also help to seek answers of whether [migrations](#) brought the diseases to new areas or the **emergence of disease triggered** people to move.

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