Medieval manuscripts are “biological time capsules” for deadly sheeppox virus

Sheeppox is a highly contagious, often fatal viral disease that was largely eradicated from much of European livestock in the 20th century. But there is still the occasional regional outbreak, such as the one that afflicted many flocks of sheep in Greece last year. In order to reconstruct how the virus has evolved over the last 3,500 years, scientists extracted and sequenced sheeppox DNA preserved in the animal skins used for the parchment of numerous medieval manuscripts. They reported their findings in a new paper published in the journal Science Advances.

“The recording of ancient DNA of pathogens has completely changed our understanding of infectious disease in the past, and here we show that parchment can also preserve animal pathogen DNA. It is possible that archives and libraries around the world also contain the genetic traces of disease outbreaks in animals in the past,” said co-author Louis L’Hôte, a graduate student at University College Dublin. “These genomes help us understand how these pathogens evolved and how they impacted past societies—such as sheeppox virus, which we show has been affecting Eurasian sheep herds for at least three and a half millennia.”

Per the authors, the earliest known written evidence of sheeppox infection dates to the first century CE, when Roman accounts described outbreaks of skin lesions (“pustules”) in the animals. There are more frequent mentions of deadly outbreaks of “pockes” or “variola” in sheep by the Middle Ages, recorded in various agricultural texts and accounting documents in France, Spain, and England. There seemed to be a decline in outbreaks in 17th-century France, although frequent

outbreaks re-emerged in the 18th and 19th centuries, often with high mortality rates in the flocks. Great Britain did not experience a sheeppox resurgence until 1847.

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