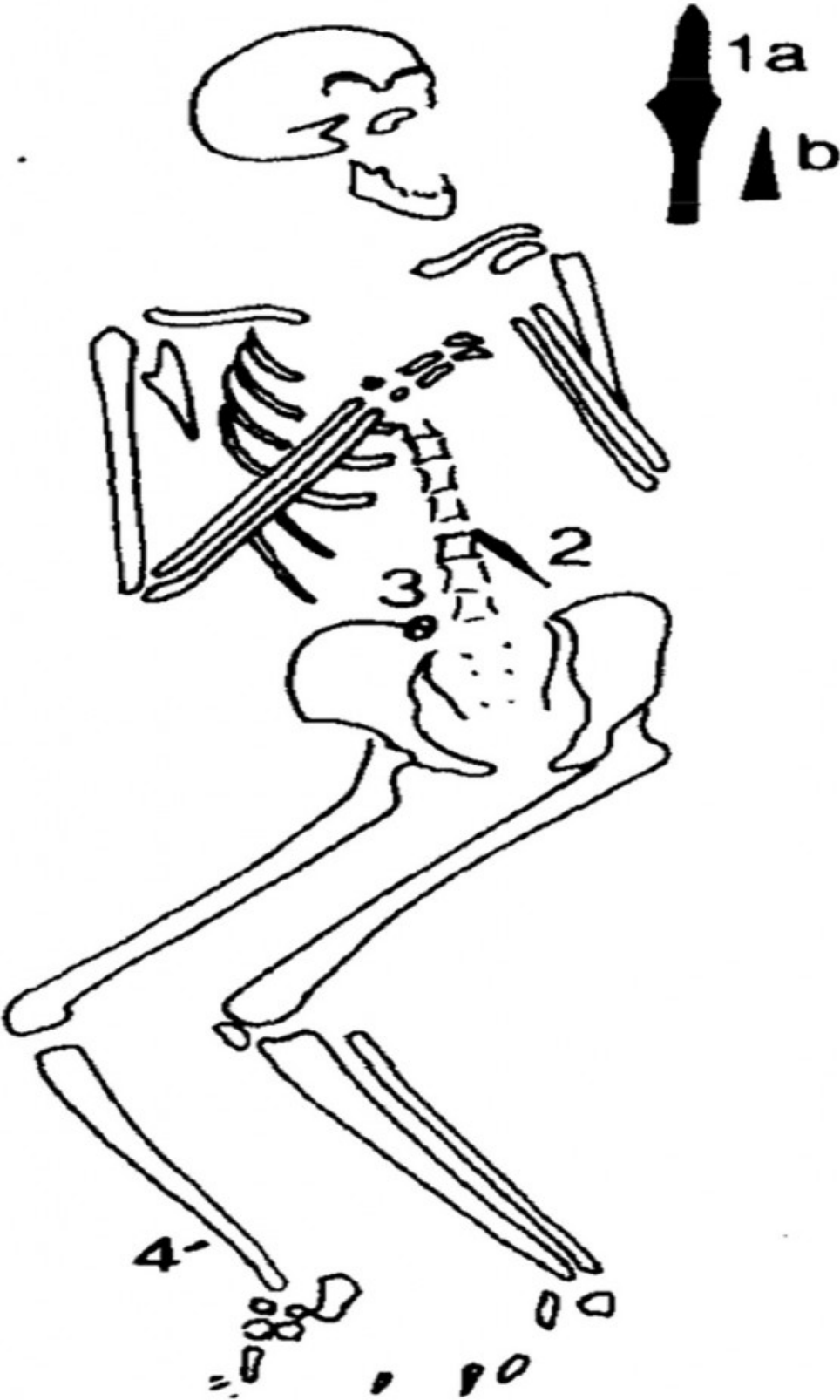


# Clues revealed about an ancient case of leprosy

September 22 2015, by Molneyhamel

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Unidentified remains found in the English countryside and all signs point to the untimely death of a young man. Researchers examined the bones of a supposed victim, which showed signs of leprosy, to search for clues about the arrival of the disease in Britain and its eventual spread throughout Europe.

The above results, reported in a recent *PLOS ONE* study, read a bit like a Holmes mystery.

The [authors](#) examined a [skeleton](#) found in Burial GC96, a grave excavated in the early 1950s near Great Chesterford, England (see a sketch of the contents of the grave site in the image above.)

Archaeologists explored the site after the area was mined for gravel, and the skeleton discovered in Burial GC96 was moved to the Department of Archaeology at the University of Southampton. Like good detectives, the authors collected evidence to try to answer the three W's:

- Who was the victim?
- What was the cause of death?
- Where did the victim come from?

The authors gleaned some immediate information regarding the "who." The skeleton's head and pelvis shape revealed the victim was male. The stage of his bone growth, as well as the wear on his teeth, indicated that he was somewhere between 25-35 years old when he died. [Carbon-14 dating](#) confirmed that he was buried sometime between 400 and 500 A.D.

As to finding out more about the cause of death, the researchers closely inspected the skeleton and found that holes were forming in his bones, and that new, jagged bone was growing to make up for this weakening. This irregular [bone growth](#) was likely caused by the disease that could have led to the victim's premature death. The holes and lesions are visible in the bones of the victim's foot, pictured below. According to the authors, while these symptoms are characteristic of [leprosy](#), their presence alone is not enough to show that the victim suffered from the disease, as they could also indicate other illnesses, such as diabetes.



Then, things got interesting. To obtain further evidence, the authors analyzed lipid biomarkers, which can indicate the presence of some diseases. In this case, the analyses confirmed that the skeleton suffered from leprosy. The strain of the disease plaguing our poor victim was a type called 3I, which would later spread throughout Southern Britain and Europe, and eventually across the Atlantic to the Americas. (The 3I leprosy strain is still found in some southern states in the US.) More interesting still, the victim's case of 3I leprosy may be the earliest known case in Britain to be confirmed by both carbon-14 dating and DNA analysis.

With the evidence and assay results in hand, the authors attempted to answer their final research question: Where did the victim come from?

The answer seems to lie in his teeth. Researchers know that when we drink water, isotopes of oxygen and strontium in it find their way into our bodies, and the particular isotopes found in the water depend on its geographic origin. While [isotope analysis](#) was not reliable enough to allow the researchers to pinpoint the victim's exact birth place, the results did suggest that he was not native to the South of England. In fact, the isotopes in the skeleton's teeth were most similar to those found in the ground and rainwater in Northern Germany or Denmark. According to the authors, these findings may provide clues that might help us understand the origins of leprosy in Britain, and the disease's eventual spread across Europe.

Though the authors' scientific sleuthing provided clues, we can't yet

neatly close the case on the arrival of leprosy in Britain and its spread throughout Europe. While evidence points to a Scandinavian origin for the 3I leprosy strain, we still don't know where exactly it came from or how it arrived in the Americas. These mysteries will continue to unravel as archaeological detectives puzzle over the case.

**More information:** (2015) "Osteological, Biomolecular and Geochemical Examination of an Early Anglo-Saxon Case of Lepromatous Leprosy." *PLoS ONE* 10(5): e0124282. [DOI: 10.1371/journal.pone.0124282](https://doi.org/10.1371/journal.pone.0124282)

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