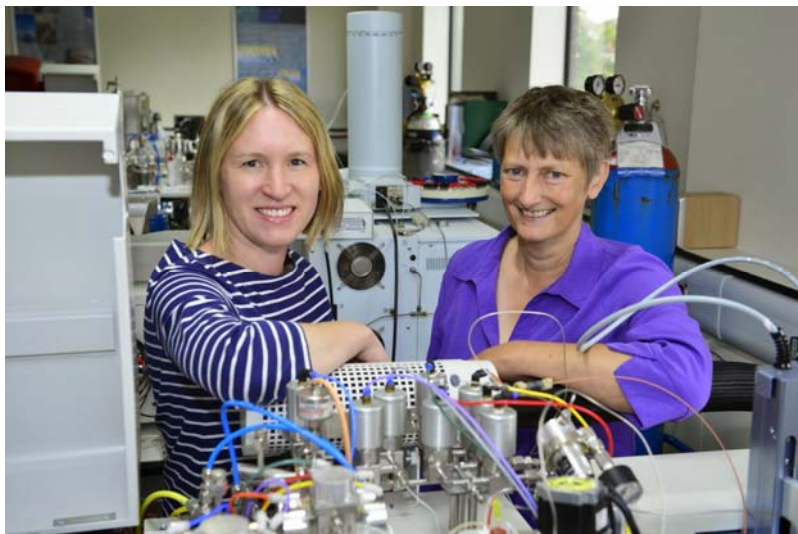


Isotopes and the bones and teeth of King Richard III ... by Catherine Pennington



Professor Jane Evans (right) and Dr Angela Lamb (left) in their lab in NIGF
Professor Jane Evans and Dr Angela Lamb work in the [NERC Isotope Geosciences Facilities \(NIGF\)](#) at the BGS in Keyworth. NIGF is one of the largest isotope laboratories in Europe for studying naturally occurring isotopes.

Jane and Angela front the Science-Based Archaeology programme where they use isotopes to uncover information about the past.

Some of Jane and Angela's work is not quite what you might expect. They have been involved with assisting the police with forensics, identifying fraudulent ceramics, mapping the migratory patterns of fallow deer, understanding how humans have transported chickens around the world and reconstructing past agricultural practices. More lately, they have been involved with the much reported lifestyle of King Richard III (see below).

But what exactly are isotopes? How do we use them to date rocks? What can isotopes in teeth and bones tell us? Jane explains in this video:

King Richard III's teeth

King Richard III died at the Battle of Bosworth in 1485 and teams from the [University of Leicester](#) and the [Richard III Society](#) uncovered this warrior king's remains under a council car park in 2012. The skeleton was then tested to confirm his identity and to try to reveal how he died. Jane and Angela were asked to find out more about his lifestyle and movements. They were given a pre-molar tooth and small pieces of femur and rib bone as these all form at different stages of life, giving a range of information across the king's lifetime as Angela explains:

“By looking at the oxygen and strontium isotopes in his bones and teeth we were able to look at where he lived through his life. The teeth, which form in childhood, confirmed that Richard had moved from Fotheringay castle in eastern England by the time he was seven and that he

had moved back to eastern England as an adolescent or young adult. We then looked at the dietary isotopes, carbon and nitrogen, to look at how his diet changed throughout his life”
One of the most important findings from their isotope analysis was that there were marked changes in his diet when Richard became king in 1483; he began eating a diet only the highest aristocracy could afford. This included freshwater fish and birds, such as swans, crane, heron and egret. In addition, the bone chemistry suggested he was drinking more wine during his short reign as King and reinforces the idea that food and drink were strongly linked to social status in Medieval England.

You can read more about the work Angela and Jane did by reading their paper:

[Multi-isotope analysis demonstrates significant lifestyle changes in King Richard III](#)

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Both work within the [Centre for Environmental Geochemistry](#), a joint venture between BGS and the University of Nottingham.

Catherine