



Counting Sheep: Proteomic Analysis (eZooMS) of Legal Documents from Medieval East Anglia

Billie Males (University of Cambridge, Department of Archaeology)
Matthew Collins (University of Cambridge, Dept of Archaeology / University of Copenhagen) Sian Collins (Cambridge University Library)
Elizabeth Stazicker (Ely Cathedral)
Emma Nichols (Cambridge University Library)
Marta Muñoz Alegre (University of Cambridge, Department of Archaeology) Jiří Vnouček (Royal Library, Copenhagen)
Sarah Fiddymont (University of Cambridge, Department of Archaeology) Anna Johnson (Cambridge University Library)
Katrina Dean (Cambridge University Library)

In recent years, the emerging field of “biocodicology” has revealed the importance of medieval archives as vast repositories of biological material. This project combines the expertise of biochemists, archaeologists, archivists, and conservators to carry out a proteomic analysis of a series of medieval East Anglian legal documents. These manuscripts preserve not only the written word: they also record the life histories of the of animals whose skins supported the administrative scaffolding of medieval society.

The material variations of animal skin were well-known to medieval craftsmen and scribes, who prepared parchment for an array of different purposes. In the 12th century *Dialogus de Scaccario*, for example, Richard fitz Neal states that sheepskin is the most appropriate choice for legal documents, as its fragile nature deters alterations and fraud. Proteomics allows us to go beyond the text of a manuscript, detecting changing species patterns and revealing the evolution of scribal practices. Such information is useful to both historians and conservators.

The design and implementation of this project will be discussed as well as its challenges and further potential applications. The manuscripts were analyzed using eZooMS, a minimally invasive peptide fingerprinting technique: collagen molecules were extracted from the surface of the parchment and analyzed by matrix-assisted laser desorption ionization time-of-flight (MALDI-TOF) mass spectrometry. This approach allows species identifications to be made— and parchment quality to be evaluated—in a way that meets conservation standards.