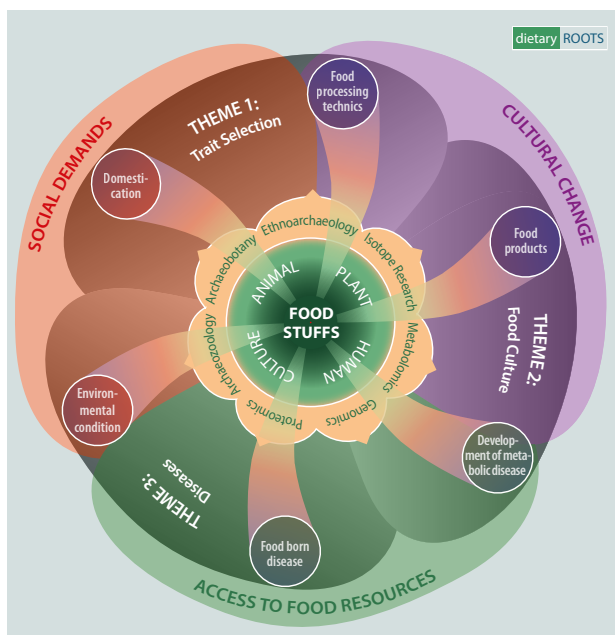


Harriet Hunt, Cambridge

Crop plant archaeogenetics: from centres of domestication to the evolutionary arms race

Genetic and genomic research on domesticated plants can answer fundamental questions at the interface of evolutionary biology, archaeology, archaeobotany, and crop science. However, plant domestication genetics and archaeogenetics remain a typically minor strand within archaeological research projects. The high-throughput sequencing revolution has enabled both the study of genomic variation in extant lineages of non-model domesticated species, and sequencing of fragmented ancient DNA from archaeobotanical specimens. Despite this, the poor biomolecular preservation of DNA in plant remains from many contexts remains a major limitation.

This talk will provide an overview of current and recent research in our laboratory on tracking the origins and spread of cultivated plants across the Eurasian continent, with a particular focus on East Asian crops that were staples in the past but are of less economic importance today: millets and buckwheat. I will present results and ongoing work from two major projects that demonstrate how crop genetic variation evidences their origins, functional adaptations, and cross-continental dispersal, in an interdisciplinary framework that integrates evidence from archaeobotany, archaeology, stable isotope studies, plant biogeography and computer modelling.



Crop plants have evolved and interacted with both animals, e.g. insect pollinators, and microorganisms including pathogenic fungi, bacteria and viruses. An exciting and underexplored area in plant archaeogenetics studies is the investigation of the plant metagenome, in particular the presence of major crop pathogens. Virtually invisible in the conventional archaeological record, the evolutionary dynamics of hosts and pathogens and their epidemiological consequences were undoubtedly of major significance for the stability of past societies. I will discuss the potential of genomic studies to provide evidence for these biotic interactions in the past.