

Abstract

Studies of ancient DNA over the last decade have been pivotal in answering archaeological, evolutionary and ecological questions. More recently, this data has also been used in the analysis of human health in the past, in the analysis of pathogen evolution, the identification of specific genetic disorders, and the identification of adaptive changes in the recent past. In the first part of this thesis, I analyse two bacterial species involved in dental disease, and assess their evolution in conjunction with human dietary and demographic changes. In the middle two chapters, I assess two different sets of individuals with bone lesions which were suspected to be genetic: in the first of these chapters, I use IBD based approaches to identify genetic relatedness and potential disease-associated regions of the genome. In the second of these chapters, I identify different causative mutations in both individuals identified with this disease. Finally, I assemble a dataset of high-quality Irish genomes, and use these to analyse functional variation and natural selection in the history of this population.