

## **Bernard Wood: Research Interests**

My primary research interests are directed towards understanding the evolution of higher primates and in particular the hominin lineage, or clade. 'Hominins' is an informal term that applies to all the components of the lineage that separated from one, or more, of the African apes between five and eight million years ago, and which persists as *Homo sapiens*. The aim of hominin evolutionary biology is to develop an understanding of both the processes that shaped hominin evolution, and of the hominins themselves, notably their adaptations, together with their behavioural implications and ecological contexts.

The initial task in this long-term strategy has been the identification and characterization of taxa within the early hominin fossil record. Problems posed during this study have stimulated a series of research programs, undertaken alone or together with colleagues. These have included:-

- i) an examination of the changes occurring in the tarsal bones during hominin evolution;
- ii) a survey of patterns of sexual dimorphism in the higher primate skeleton;
- iii) attempts to define and separate intraspecific shape differences from the differences in shape which occur between species;
- iv) an analysis of cranial base variation in extant apes and fossil hominoids;
- v) an examination of the relationship between tooth size and body mass in primates;
- vi) an assessment of the dental variability in living and fossil populations;
- vii) an analysis of tooth crown microstructure and the dynamics of enamel development in fossil hominins;
- viii) an examination of tooth root morphology in primates; and
- ix) a revision of hominin taxonomy.

Recent research has been directed towards:-

- a) evaluating and improving methods of phylogenetic analysis;
- b) improving our understanding of the relationships between dental structure and function;
- c) exploring the role of sexual dimorphism and allometry in determining the nature of morphological differences within and between species;
- d) tracing the evolution of tooth macrostructure and microstructure within the hominin clade;
- e) and identifying adaptive shifts within the hominin clade.

Current research projects are focus in bioinformatics. They include the preparation of a comprehensive database of fossil hominins including conventional and 3D data, a systematic analysis of higher primate soft and hard tissue morphology that includes data about both presence/absence of features and the extent of intraspecific variation, a study of the nature, and relative contributions, of geographical variation and sex-associated differences to intraspecific variation in the living hominoids. Other projects focus on the use of special imaging techniques that will allow dental macrostructure and microstructure to be used to test phylogenetic hypotheses, an analysis of the tempo and mode of evolutionary change in early hominins, and the systematic and functional analysis of the hominin postcranial skeleton.

As well as my work in the laboratory, I have also been involved with hominin palaeontological fieldwork. I was one of the original team who took part in the exploration of the region to the east of Lake Turkana (formerly Lake Rudolf); this expedition confirmed the presence of a rich vertebrate fossil site. Richard Leakey and the late Glynn Isaac jointly established the Koobi Fora Research Project to undertake fieldwork at the site, and I spent a total of eleven months in the field. The Research Project was conducted by a consortium of about forty scientists from the USA, Kenya, UK and France who were involved in the various aspects of the research program. For three years I was the Secretary of the Council of the Research Project. My responsibilities included organizing the annual scientific meetings, and the dissemination of the research results. I negotiated the publication (by Clarendon Press, Oxford) of a series of eight monographs, which present the results of the research programs.