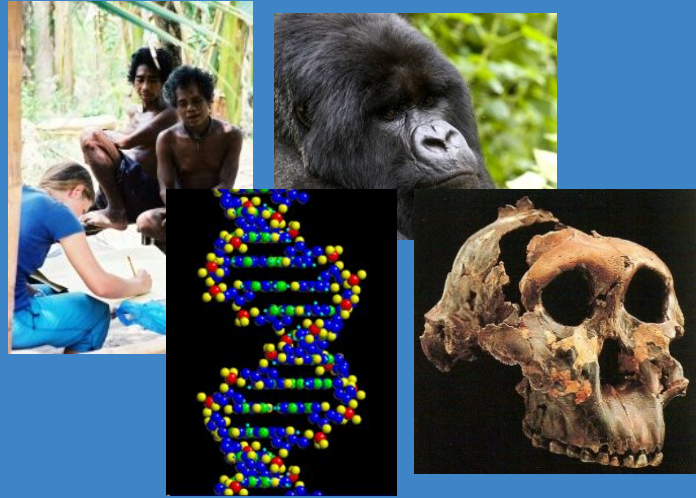


Studying Biological Anthropology as a part of BBS



DO THESE QUESTIONS INTEREST YOU?

- *Do we have a gene for culture?*
- *Why are people in Africa so diverse?*
- *Why are pygmies small?*
- *Who were the first creatures to make tools?*
- *Do chimpanzees have language?*
- *How long have we been human?*
- *Are humans still evolving?*
- *Can stone tools trace the dispersal of hominins?*
- *Can genetics help us save threatened primates?*
- *Is there more to evolution than natural selection?*
- *Who was Eve, and did she meet Adam?*
- *Can a χ^2 test save lives?*
- *Is one's IQ in the genes?*
- *Do we choose our mates on the basis of smell?*
- *Does malnutrition stunt your growth?*
- *Have we always suffered from the same diseases?*
- *Why are men (usually) bigger than women?*
- *Can I extract DNA (genes) from fossil bone?*

IF YOU ARE A PART II BIOLOGICAL AND BIOMEDICAL SCIENCES (BBS) STUDENT, YOU CAN TAKE A MAJOR IN HUMAN EVOLUTION, ECOLOGY AND BEHAVIOUR OR A CHOOSE A MINOR IN BIOLOGICAL ANTHROPOLOGY.

WHAT IS BIOLOGICAL ANTHROPOLOGY?

Anthropology is the study of humans in a comparative perspective – comparing societies and cultures, looking at change over time, exploring human diversity. Biological Anthropology takes this comparative approach in terms of human evolution and adaptation: comparisons between humans and other animals to understand human uniqueness and biological continuity; comparisons across time to unravel the evolutionary history of hominins over the last 5 million years; investigating variation in human development and health, exploring the mechanisms that underlie population differences today and in the past; and looking at individual behaviour in terms of evolution and adaptation and its underlying cognitive basis.

COURSES OFFERED FOR 2019-2020

- B2 – HUMAN ECOLOGY AND BEHAVIOUR
- B3 – HUMAN EVOLUTION
- B11 – WHAT FINCHES TELL US ABOUT HUMANS*
- B12 – CULTURE EVOLVES *
- B13 – HEALTH AND DISEASE THROUGHOUT HUMAN EVOLUTION*
- B14 – A TECHNOLOGICALLY DEPENDENT LINEAGE*
- B15 – FRIENDS, RELATIVES AND COMMUNITIES: HUMAN SOCIAL EVOLUTION*
- B16 – GENOMES: ANCIENT, MODERN AND MIXED*
- B17 – OUR EXTENDED FAMILY: PRIMATE BIOLOGY AND BEHAVIOUR*
- B18 – DECODING THE SKELETON*

*ONE TERM PAPERS

BIOLOGICAL AND BIOMEDICAL SCIENCES (BBS) STUDENTS CAN TAKE BIOLOGICAL ANTHROPOLOGY PAPERS EITHER AS A MAJOR OR AS A MINOR:

MAJOR in Human Evolution, Ecology and Behaviour:

- B2 – Human Ecology and Behaviour
- B3 – Human Evolution
- Two papers from B11-B18
- Dissertation (under NST regulations)
- A further paper (minor) in another BBS subject

MINOR in Biological Anthropology:

- Either B2 (Human Ecology and Behaviour) or B3 (Human Evolution)
-

B2 – HUMAN ECOLOGY AND BEHAVIOUR

This paper examines human ecology from a comparative perspective, emphasising both the primate evolutionary context and the vast diversity within our species.



It is taken by :

- students doing the Biological Anthropology Track in Part IIA of the Archaeology Tripos
- students who have completed Part IB MVST, NST, PBS or Part IIA HSPS and are doing a one-year Part II in Biological Anthropology as part of the Archaeology Tripos
- students doing a *Major in Human Evolution, Ecology and Behaviour* as part of the NST Part II Biological and Biomedical Sciences.

It may be taken as an option by:

- Part IIA students in the Archaeology Tripos
- Part IB students in the HSPS (Human, Social and Political Sciences) Tripos
- Part IB students in the PBS (Psychological and Behavioural Sciences) Tripos
- Part II students in the NST Tripos
- NST Part II Biological and Biomedical Sciences students (not majoring in *Human Evolution, Ecology and Behaviour*)

The paper introduces students to the core principles of ecology and behavioural ecology, as a framework for exploring adaptation in humans and non-human primates. Diversity in primate behaviour is broadly examined, ranging from foraging strategies to social organisation to communication. We will then consider how human life-history, social structure and subsistence can be situated within the broader context of the primate order; and explore the extent to which our capacity for culture, cooperation and language is shared with our closest relatives. Additionally, human adaptation will be analysed from a cross-cultural perspective, considering society from an evolutionary standpoint and surveying the entire spectrum of human ways of life, with a particular emphasis on small-scale societies.

Paper Coordinator: Dr Nikhil Chaudhary

MICHAELMAS TERM: 16 LECTURES

LENT TERM: 8 LECTURES & 3 SEMINARS

ASSESSMENT: 3 HOUR EXAM

B3 – HUMAN EVOLUTION

This paper provides a foundation in Human Evolution.



It is taken by :

- students doing the Biological Anthropology Track in Part IIA of the Archaeology Tripos
- students who have completed Part IB MVST, NST, PBS or Part IIA HSPS and are doing a one-year Part II in Biological Anthropology as part of the Archaeology Tripos
- students doing a *Major in Human Evolution, Ecology and Behaviour* as part of the NST Part II Biological and Biomedical Sciences

It may be taken as an option by:

- Part IIA students in the Archaeology Tripos
- Part IB students in the HSPS (Human, Social and Political Sciences) Tripos
- Part IB students in the PBS (Psychological and Behavioural Sciences) Tripos
- Part II students in the NST Tripos
- NST Part II Biological and Biomedical Sciences students (not majoring in *Human Evolution, Ecology and Behaviour*)

The paper looks at human evolution from its primate context millions of years ago to the present day. It explores hominin origins and their relationship to the apes, the emergence of bipedalism in an ecological framework, and the adaptive radiation of hominins between 4 and 2 million years ago. It examines the first tool use of hominins more than 2.5 million years ago, and the factors shaping the evolution of early *Homo* and their technology within Africa. From shortly after 2 million years ago, hominins dispersed beyond Africa, and we will look at the fossil and archaeological record for these dispersals and adaptations, their diversity, as well as their behaviour and technology. We focus in detail on the emergence and dispersal of modern humans, giving particular focus on the diversity of their technology and adaptations in different parts of the world, and their relationship to both the climate in which they evolved and the archaic competitors such as Neanderthals whom they out-survived. We will explore modern human dispersal(s) and how these shaped human diversity. The context for all this will be evolutionary theory and biology, looking at the role of selection and adaptation, and the processes by which lineages diversify and potentially become extinct. We will look at the relative importance of genes, phenotypes and behaviour in the evolutionary process.

Paper Coordinator: Prof Robert Foley

MICHAELMAS TERM: 16 LECTURES

LENT TERM: 8 LECTURES & 3 SEMINARS

ASSESSMENT: 3 HOUR EXAM

B11 – WHAT FINCHES TELL US ABOUT HUMANS



This paper explores concepts and principles in evolutionary theory and their application to the evolution of humans.

It may be taken as an option by:

- students doing the *Biological Anthropology Track* in Part IIB of the Archaeology Tripos
- students doing the *Biological Anthropology/Archaeology Joint Track* as Part IIB of the Archaeology Tripos
- students who have completed Part IB MVST, NST, PBS or Part IIA HSPS and are doing a *one-year Part II in Biological Anthropology* as part of the Archaeology Tripos
- students doing Part II PBS and NST or Part IIB Archaeology
- NST Part II Biological and Biomedical Sciences students as part of a *Major in Human Evolution, Ecology and Behaviour*

The paper covers key concepts in evolution theory - selection, drift, adaptation, behavioural ecology, the evolution of form, allometry & heterochrony, species & speciation, extinction, evolutionary geography, evolutionary systematics and macroevolution - each paired with cases and examples from human evolution, including a discussion of bipedalism as a complex adaptive system, the evolution of humans' unique growth and life-history, patterns of speciation and hybridisation, the role of geographic dispersals in diversification, and hominin evolutionary trends. The paper is organised in the form of 8 lectures and 8 discussion seminars during which the case studies in human evolution are explored.

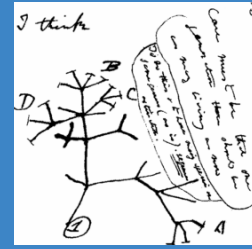
Paper Coordinator: Prof Marta Mirazon Lahr

LENT TERM: 12 LECTURES & 4 SEMINARS

ASSESSMENT: 2 HOUR EXAM

B12 – CULTURE EVOLVES

This paper examines how evolutionary theory can be explained to understand cultural change.



It may be taken as an option by:

- students doing the *Biological Anthropology Track* in Part IIB of the Archaeology Tripos
- students doing the *Biological Anthropology/Archaeology Joint Track* as Part IIB of the Archaeology Tripos
- students who have completed Part IB MVST, NST, PBS or Part IIA HSPS and are doing a *one-year Part II in Biological Anthropology* as part of the Archaeology Tripos
- students doing Part II PBS and NST or Part IIB Archaeology
- NST Part II Biological and Biomedical Sciences students as part of a *Major in Human Evolution, Ecology and Behaviour*

Does cultural change constitute a form of evolutionary process that shares fundamental similarities to genetic evolution? What are the key differences and what are their implications? This paper provides a comprehensive survey of the field of cultural evolutionary studies, which studies human and non-human cultural change using methods and concepts based on evolutionary theory. In this framework, cultural change is seen as changes over time in the frequency of cultural variants expressed in a population. This could be the result of factors such as natural selection, drift, or migration, but also innovation and different forms of transmission biases. Selected topics include theoretical models of social learning, the application of phylogenetic methods to cultural data, inferential tools for analysing fashion cycles, and key concepts such as cumulative cultural evolution and cultural group selection. The paper also introduces practical skills for creating computer simulations of human behaviour and phylogenetic analysis of cultural data.

Paper Coordinator: Dr Enrico Crema

LENT TERM: 10 LECTURES, 2 SEMINARS, 4 LAB SESSIONS

ASSESSMENT: 2 HOUR EXAM

B13 – HEALTH AND DISEASE THROUGHOUT HUMAN EVOLUTION



This paper explores patterns of human health and disease from our evolutionary ancestors through to the present day.

It may be taken as an option by:

- students doing the *Biological Anthropology Track* in Part IIB of the Archaeology Tripos
- students doing the *Biological Anthropology/Archaeology Joint Track* as Part IIB of the Archaeology Tripos
- students who have completed Part IB MVST, NST, PBS or Part IIA HSPS and are doing a *one-year Part II in Biological Anthropology* as part of the Archaeology Tripos
- students doing Part II PBS and NST or Part IIB Archaeology
- NST Part II Biological and Biomedical Sciences students as part of a *Major in Human Evolution, Ecology and Behaviour*

From conception to death, humans undergo a process of development that is shaped by genes, pathogens and environment. This process is a product both of evolutionary change and of the succession of environments that individuals encounter through their lives, resulting in health patterns in populations that vary greatly with time, space and culture. This course explores means to characterize health patterns of different populations from the archaeologically recovered and historically documented past up to the present day, and goes on to predict health over the next century. We will investigate how disease has shaped the way humans have evolved, how diseases have evolved to exploit humans, and how humans have attempted to treat disease through the practice of medicine.

Paper Coordinator: Dr Piers Mitchell

MICHAELMAS TERM: 16 LECTURES & SEMINARS

ASSESSMENT: 2 HOUR EXAM

B14 – A TECHNOLOGICALLY DEPENDENT LINEAGE

This paper explores how and why hominins and humans became a species entirely dependent upon technology, and how the history of stone tools over the last three million years can be used to unravel this story.



It may be taken as an option by:

- students doing the *Biological Anthropology Track* in Part IIB of the Archaeology Tripos
- students doing the *Biological Anthropology/Archaeology Joint Track* as Part IIB of the Archaeology Tripos
- students who have completed Part IB MVST, NST, PBS or Part IIA HSPS and are doing a *one-year Part II in Biological Anthropology* as part of the Archaeology Tripos
- students doing Part II PBS and NST or Part IIB Archaeology
- NST Part II Biological and Biomedical Sciences students as part of a *Major in Human Evolution, Ecology and Behaviour*

Humans are unique in many ways, but one of these is that we are a technologically-dependent species; while other species are known to use tools, few if any, are really dependent in the sense that they would go extinct if they were removed from their behavioural repertoire. Humans would. This course looks at the role that technology played in human evolution, from its primate foundations to the dispersals of modern humans across the globe. We will look at the broader issues of how technology impacts on hominin evolution and the evolutionary process, the nature of lithic production and what it tells us about behaviour and cognition, and how and why technology came to be at the core of hominin behaviour.

Paper Coordinator: Prof Robert Foley

MICHAELMAS TERM: 16 LECTURES & SEMINARS

ASSESSMENT: 2 HOUR EXAM

B15 – FRIENDS, RELATIVES AND COMMUNITIES: HUMAN SOCIAL EVOLUTION



This paper highlights the pivotal role cooperation and sociality have played in human evolutionary history whilst also exploring the striking diversity in social structure and behaviour both within and between contemporary societies.

It may be taken as an option by:

- students doing the *Biological Anthropology Track* in Part IIB of the Archaeology Tripos
- students doing the *Biological Anthropology/Archaeology Joint Track* as Part IIB of the Archaeology Tripos
- students who have completed Part IB MVST, NST, PBS or Part IIA HSPS and are doing a *one-year Part II in Biological Anthropology* as part of the Archaeology Tripos
- students doing Part II PBS and NST or Part IIB Archaeology
- NST Part II Biological and Biomedical Sciences students as part of a *Major in Human Evolution, Ecology and Behaviour*

Cooperation is widespread throughout the natural world, but many anthropologists consider human prosocial behaviour as unparalleled. This course seeks to explain the scale and ubiquity of cooperation between genetically unrelated individuals and the evolution of our prosocial emotions and cognition. We will also consider which ecological factors best predict how societies are organised and how social network analysis can be used as an analytical tool in the study of social structure. Throughout the term ongoing debates and unresolved questions related to human social evolution will be discussed, including the relationship between religion and cooperation and the persistence of pathologies such as social anxiety and autism.

Paper Coordinator: Dr Nikhil Chaudhary

MICHAELMAS TERM: 14 LECTURES & 2 SEMINARS

ASSESSMENT: 2 HOUR EXAM

B16 – GENOMES: ANCIENT, MODERN AND MIXED



This paper explores human evolutionary genetics as a tool for understanding human diversity today.

It may be taken as an option by:

- students doing the *Biological Anthropology Track* in Part IIB of the Archaeology Tripos
- students doing the *Biological Anthropology/Archaeology Joint Track* as Part IIB of the Archaeology Tripos
- students who have completed Part IB MVST, NST, PBS or Part IIA HSPS and are doing a *one-year Part II in Biological Anthropology* as part of the Archaeology Tripos
- students doing Part II PBS and NST or Part IIB Archaeology
- NST Part II Biological and Biomedical Sciences students as part of a *Major in Human Evolution, Ecology and Behaviour*

The paper discusses core concepts and principles of human genetics and the tools through which adaptive evolution and population genetic histories can be inferred. It then explores key human genetic adaptations - dietary (lactose tolerance), environmental (high altitude, spleen size, pigmentation), immunological (malaria, plague, innate immunity) and developmental (stature, fat deposition). Having considered gene-based patterns, it introduces the main historical processes - dispersals, migrations, admixture - that have shaped human diversity through time, and discusses examples of gene-culture c. The paper ends with a discussion of the impact of ancient genomes on our understanding of both adaptive evolution and genetic history, as well as the extent to which admixture with ancient hominins has impacted on our diversity and adaptability.

Paper Coordinator: *TBA*

LENT TERM: 16 LECTURES & SEMINARS

ASSESSMENT: 2 HOUR EXAM

B17 – OUR EXTENDED FAMILY: PRIMATE BIOLOGY AND BEHAVIOUR



This paper explores the fascinating world of our closest relatives in the animal world - the diversity, evolution, ecology, adaptation and behaviour of non-human primates.

It may be taken as an option by:

- students doing the *Biological Anthropology Track* in Part IIB of the Archaeology Tripos
- students doing the *Biological Anthropology/Archaeology Joint Track* as Part IIB of the Archaeology Tripos
- students who have completed Part IB MVST, NST, PBS or Part IIA HSPS and are doing a *one-year Part II in Biological Anthropology* as part of the Archaeology Tripos
- students doing Part II PBS and NST or Part IIB Archaeology
- NST Part II Biological and Biomedical Sciences students as part of a *Major in Human Evolution, Ecology and Behaviour*

The paper introduces students to the major issues that arise from studying the evolution, diversity and behaviour of primates. Primates exhibit both unique features among mammals, such as their sociality, life-history and potential for culture, but they also share with them patterns of adaptive radiations, extinction, dispersals and competition. Advanced primatology thus offers an opportunity to study current research topics that bring together the general approaches of evolutionary biology and the unique perspectives of primatologists. Aspects to be covered will include comparative life-histories, diet and dietary adaptations, physiology, morphology and energetics, and social structure, and will focus on the great apes. The paper ends with an introduction to key issues in primate conservation throughout the world.

Paper Coordinator: *TBA*

LENT TERM: 16 LECTURES & SEMINARS

ASSESSMENT: 2 HOUR EXAM

B18 – DECODING THE SKELETON

This paper explores how we can investigate human biology, adaptation, evolution and variation from skeletons and fossils.



It may be taken as an option by:

- students doing the *Biological Anthropology Track* in Part IIB of the Archaeology Tripos
- students doing the *Biological Anthropology/Archaeology Joint Track* as Part IIB of the Archaeology Tripos
- students who have completed Part IB MVST, NST, PBS or Part IIA HSPS and are doing a *one-year Part II in Biological Anthropology* as part of the Archaeology Tripos
- students doing Part II PBS and NST or Part IIB Archaeology
- NST Part II Biological and Biomedical Sciences students as part of a *Major in Human Evolution, Ecology and Behaviour*

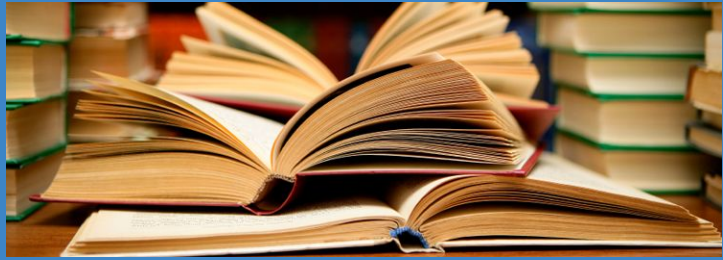
Skeletons and fossils are frequently the only physical remains we have of past populations, and offer a crucial window on the biology and lives of our ancestors. This paper considers the varied aspects of life in the past that we can infer from bones, including age at death, sex, body size, growth, activity, health, and taxonomy. It explores the different methods employed in skeletal analyses, and the basis for the techniques we use: how variation in living reference populations for which we know patterns of aging, sexual dimorphism, growth, enable to infer these characteristics from the skeletal remains. It also considers the challenges of applying these techniques based on modern populations to the fossil and archaeological records. In addition to traditional methods for estimating characters such as life span and health, the paper explores how more recent developments in fields such as palaeogenomics, palaeoproteomics, analyses of 3D morphology and work on dental calculus offer new ways in which to understand ancient lifeways and relationships among different individuals, populations and species of hominins.

Paper Coordinators: Prof Marta Mirazon Lahr & Dr Emma Pomeroy

MICHAELMAS TERM: 16 SEMINARS & PRACTICAL SESSIONS

EXAMINATION: SUBMITTED WORK

DISSERTATIONS IN BIOLOGICAL ANTHROPOLOGY AS PART OF BBS, NATURAL SCIENCES TRIPOS



- Towards a Part II in BBS *Major in Human Evolution, Ecology and Behaviour*

Dissertations towards completion of a NST Biological and Biomedical Sciences Part II, follow these regulations:

- A topic within the field of Biological Anthropology, approved by the division of the Michaelmas Term
- Not more than 6,000 words, excluding tables, figures, and references.
- Not including original data collection and analysis (i.e., in the form of an extended essay)
- To be submitted by the first Friday of Easter Term

Paper Coordinator: BioAnth Part II Coordinator