BIOLOGICAL ANTHROPOLOGY
OF THE HUMAN SKELETON
To our families
	to Steve and Marty
	M. Anne Katzenberg

to Victor, Rob, and Barb
	Shelley R. Saunders
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The preface to the first edition sets out the goals we hoped to accomplish by preparing the volume titled, *Biological Anthropology of the Human Skeleton*. In this second edition we endeavor to maintain those goals, to update recent developments in skeletal studies and particularly, to emphasize information that provides the reader with a basic understanding of the various techniques and methods of investigating bones and teeth. Many chapters include examples, set off from the main body of the text, that illustrate or offer more detail about the particular analysis under consideration. We also provide six new chapters on topics not covered in the previous edition. These topics include taphonomic factors affecting burial assemblages, nonmetric traits of the skeleton and dentition, trauma, osteoporosis, and new developments in morphometric analysis. It is our hope that the book will be used in upper level undergraduate and graduate courses in human skeletal studies (e.g., advanced human osteology) as well as by interested professionals seeking a better understanding of advanced methods in osteological research. The chapters should provide an entry point into a particular specialty, with background information as well as practical guidelines, applications, and critical reviews of research approaches, including a wealth of selected references for additional reading.

The book is divided into five parts, although considerable overlap exists and some chapters could have easily appeared in one or another section. Part I is titled “Theory and Application in Studies of Past People” and includes three chapters. As before, the first chapter, on ethical considerations of working with human skeletal remains, is presented by Phillip Walker. Walker has updated and expanded the scope of his chapter to include worldwide examples of problems and solutions to working with human remains. The second chapter, by Douglas Ubelaker, provides current perspectives on the interrelationship between forensic anthropology and more traditional studies in human osteology, arguing that these are complementary fields of inquiry. The field of forensic anthropology has gained prominence since the publication of the first edition of this book, with an increase in the number of academic positions in the field, and increased participation by forensic anthropologists in medico-legal investigations. The third chapter
in the first section is a new contribution by Ann L. Stodder, on taphonomy and human skeletal remains. Stodder draws from her experience in working with burials and specific burial contexts in several different regions of the world to offer a comprehensive review of the various postmortem factors that affect the integrity of the skeleton after death.

Part II is newly titled “Morphological and Developmental Analyses” and includes five chapters on development and modeling of bones and teeth. “Juvenile Skeletons and Growth Related Studies,” by Shelley Saunders, examines the problems of studying juvenile skeletal remains from archaeological sites. This chapter has been updated with new examples of applications from Saunders’ extensive work with historic cemeteries. Alexander Robling and Sam Stout have revised their previous contribution on histomorphometry and, once again, provide helpful appendices, including a worked example of age determination from cortical bone histology and a compilation of various histomorphometric techniques for age determination from various skeletal elements. Christopher Ruff has updated his chapter on biomechanical analyses, providing new examples and illustrations. Benedikt Hallgrimsson and colleagues present a new chapter on the “new morphometrics” and the importance of understanding the interface between morphometric studies in the biological sciences and those studies in biological anthropology in the context of a more solid understanding of genetic mechanisms and their role in determining phenotypic variation. The chapter on dental microstructure, by Charles FitzGerald and Jerome Rose, retains the clear descriptions of the microscopic structure of teeth and the events recorded in dental microstructures, including evidence for stress and for age determination. Examples of more recent applications and new technological developments have been added. The final chapter in this section is a new contribution by Richard Scott on dental morphology, specifically dental nonmetric traits. The chapter provides descriptions of various morphological variants of the teeth and very practical advice on how to recognize and record dental crown traits so that they can be used in population studies.

Part III, “Prehistoric Health and Disease,” includes three chapters. Simon Hillson has updated his previous chapter on dental pathology, retaining a protocol for data collection and updating the state of our understanding of the causes and implications of pathological conditions of the teeth and supporting structures. Nancy Lovell provides a new chapter on skeletal trauma. This chapter focuses on fractures but also includes more general information on responses of bone to trauma and diagnostic procedures for evaluating trauma in the past. The third chapter is also new to the second edition. Sabrina Agarwal presents information on osteoporosis in past populations with both cross-cultural and historical perspectives. She offers a very useful comparison of the advantages and disadvantages of the different methodological techniques for obtaining information on bone mass, density, and quality and their relevance to the study of past populations.

Part IV, “Chemical and Genetic Analyses of Hard Tissues,” as in the previous edition, includes three chapters. Anne Katzenberg describes methods and applications of stable isotope analysis that are used to reconstruct diet, estimate the duration of nursing, and determine residence and migration patterns of the past. This field has expanded considerably since the previous edition. James Burton discusses bone chemistry and the trace elements of bone that have been used to reconstruct past diet as well as studies focusing on postmortem alterations of bone chemistry. Anne Stone provides background and examples of ancient DNA studies from human remains. She illustrates the significant challenges of working with ancient DNA, the fact that it is highly subject to destruction and contamination and expensive to analyse. She also points out that hypotheses about the genetics of populations in the past must be consistent with what is known about modern populations and that
research projects require the coordination of expertise from many different fields from paleopathology to archaeology.

Part V includes four chapters on quantitative methods and population studies. Michael Pietrusewsky has updated his contribution on metric analysis, focusing on craniometric studies for population reconstruction. He provides an example from his extensive work in Polynesia. Shelley Saunders and Dori Rainey provide a new chapter on skeletal non-metric traits. They critically review the background of such studies and include illustrations of many of the more commonly used traits. They offer suggestions for future areas of research in this field, including study of the ontogenic development of specific traits and the relationship between the prevalence of traits in past populations and information on other skeletal criteria such as DNA studies. As in the previous edition, there are two chapters on paleodemography. George Milner, James Wood, and Jesper Boldsen have updated their previous contribution focusing on both the promises and the limitations of paleodemographic studies. A new chapter by Richard Meindl, Robert Mensforth, and Owen Lovejoy provides a detailed example of a particular paleodemographic study, from the Libben site, in northern Ohio.

As with the previous edition, we hope that this volume will provide useful information for both current and future biological anthropologists interested in the latest research on human skeletal and dental remains.

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