Now including numerous full color figures, this updated and revised edition of Larsen’s classic text provides a comprehensive overview of the fundamentals of bioarchaeology. Reflecting the enormous advances made in the field over the past 20 years, the author examines how this discipline has matured and evolved in fundamental ways.

Jargon free and richly illustrated, the text is accompanied by copious case studies and references to underscore the central role that human remains play in the interpretation of life events and conditions of past and modern cultures, from the origins and spread of infectious disease to the consequences of decisions made by humans with regard to the kinds of foods produced, and their nutritional, health, and behavioral outcomes. With local, regional, and global perspectives, this up-to-date text provides a solid foundation for all those working in the field.

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Bioarchaeology
Interpreting Behavior from the Human Skeleton
SECOND EDITION

CLARK SPENCER LARSEN
The Ohio State University, USA
For Chris and Spencer and

In memory of George J. Armelagos
(1936–2014), visionary scientist,
bioarchaeologist, friend, and mentor
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It has been more than 15 years since the publication of the first edition of *Bioarchaeology: Interpreting Behavior from the Human Skeleton*. The response following its publication in 1997 was overwhelmingly positive – in reviews and comments to me from virtually every corner of the globe. I credit Robert Benfer for convincing me that a synthesis paper I wrote for Michael Schiffer’s book series, *Advances in Archaeological Method and Theory* (Larsen, 1987), should be expanded into a book-length treatment of the field. He made the case to me that such a book would serve to define what bioarchaeologists do and give bioarchaeology a sense of identity and mission.

Since the publication of the first edition, I have been thrilled to see how the field has matured and evolved, the increasing scientific rigor, the extraordinary volume of work published, the high quality of the literature, the appeal that it has had for new and upcoming generations of bioarchaeologists, the development of new directions and advances, and the impressive increase in international and multidisciplinary collaborative research programs. With regard to new directions, we have seen expansion in areas relating to links between the social and biological, what some call “social bioarchaeology” (Agarwal & Glencross, 2011; Gowland & Knüsel, 2006), and facets of it relating to identity, gender, and social and cultural forces that leave their impression on the skeletal body (Knudson & Stojanowski, 2008, 2009; Larsen & Walker, 2010; Sofaer, 2006). In addition, there have been at least two books published with *Bioarchaeology* as the primary title, one providing a historical overview with reference to the United States (Buikstra & Beck, 2006) and the other focusing on practice (Martin et al., 2013).

The advances in methods for the study of ancient skeletal and dental tissues have expanded our understanding of past population health and lifestyle in ways unfathomable or just on the horizon when the previous edition of the book was published. As shown throughout the present volume, applications of the study of ancient DNA to mobility and residence, disease diagnosis, and biology generally are breathtaking (Kaestle, 2010). The advances made in genome-wide and sequencing technology have given access to remarkable amounts of data, providing new insights and perspectives on the human experience in the past. Similarly, imaging technology has developed at a remarkable pace (Chhem & Brothwell, 2007; Schultz, 2001). These advances have played a central role in the increasingly interdisciplinary orientation of bioarchaeology (Armelagos, 2003; Zuckerman & Armelagos, 2011). Fundamental to the development of bioarchaeology is its comparative approach and its grounding in the scientific method and its approach to discovery and problem solving. These strengths provide perspective on present conditions, such as the human–environment interaction, evolution and adaptation, and success and failure, and understanding of who we are today.
When I wrote the first edition, I had in mind a comprehensive volume, a synthesis outlining what had been accomplished and future directions. So much has been written since the first edition that this new edition does not attempt to consider all advances that have appeared since the mid-1990s. Rather, I have focused on key developments in areas that have more fully progressed in the last couple of decades, as well as new and emerging areas, drawing on my own experience and what has excited me most in bioarchaeological inquiry. In addition, I provide a new stand-alone chapter on paleodemography. Demographic structure of past populations provides insights into age profiles. More immediate to bioarchaeology, age structure of archaeological skeletal series gives important context for interpreting the variation seen in virtually all parameters discussed in this book, ranging from diet and dietary change over the life course to reconstruction of lifestyle and activity via skeletal morphology and degenerative articular pathology. I well understood the potential of paleodemography while I wrote the first edition, but frankly, I thought that the area of study was in such disarray, that I regarded a stand-alone chapter as preliminary and confusing. Since then, however, there have been considerable advances made in paleodemography, especially regarding the meaning of age structure for understanding population dynamics and what is similar and different in comparing age structure of the dead with vital statistics based on the living.

I also provide discussion of challenges that were presented in the concluding chapter of the first edition, such as sample representation, the “osteological paradox,” global perspectives, cultural patrimony, and the new world of genomics and its importance to bioarchaeology and the study of the human past. Finally, my own experience in bioarchaeology has widened greatly since I wrote the first edition, especially resulting from the experience gained as codirector of two large collaborative research projects, the Global History of Health Project and the Çatalhöyük Bioarchaeology Project, and a field school in Medieval archaeology and bioarchaeology (Field School Pozzeveri). Major funding from the US National Science Foundation for the global project, the National Geographic Society and the Templeton Foundation for the Çatalhöyük project, and the Italian government for the field school and associated research program made all of this work possible.

The preparation of the second edition of Bioarchaeology was an effort that could have been completed only with a considerable amount of help. I received advice on what the new edition should include or not include from Rimas Jankauskas, Dale Hutchinson, Jackie Eng, Gwen Robbins Schug, Mike Pietrusewsky, George Milner, Sam Stout, Richard Scott, Graciela Cabana, Dan Temple, George Armelagos, Tracy Betsinger, Maria Smith, Debbie Guatelli-Steinberg, Marc Oxenham, Joel Irish, Marin Pilloud, Charlotte Roberts, Chris Stojanowski, and Kim Williams. I owe a debt of gratitude to colleagues and students who read and commented on individual chapter drafts. Thanks go especially to Helen Cho, Giuseppe Vercellotti, Charlotte Roberts, Christina Torres-Rouff, Margaret Judd, Pat Lambert, Tiffiny Tung, Michele Buzon, Bonnie Glencross, George Milner, Chris Knüsel, Evan Garofalo, Chris Ruff, Libby Cowgill, Brigitte Holt, Marina Sardi, Rolo
González-José, Noreen von Cramon-Taubadel, Lesley Gregoricka, Sharon DeWitte, Julia Giblin, Jess Pearson, Laurie Reitsema, Rob Cook, Annie Katzenberg, Margaret Schoeninger, Christine White, Tracy Prowse, Mike Pietrusewsky, Chris Stojanowski, Joel Irish, Marin Pilloud, Brian Hemphill, Leslie Williams, Ann Stodder, Séb Villotte, and Britney Kyle. In addition, I benefited from advice from Haagen Klaus, Dan Temple, Josh Sadvari, and Kathryn Marklein, who read the entire manuscript and offered many substantive and helpful comments relating to content and clarity.

I thank Tracey Sanderson, formerly of Cambridge University Press, for approaching me to write the second edition, and to her successor, Martin Griffiths, for sticking with me over the years of writing. Thanks also go to Ilaria Tassistro at the Press for her assistance and skill as we moved the manuscript through the production process and to Jeanette Mitchell for her excellent copy-editing. I acknowledge the hard work by Sarah Martin and Kathryn Marklein in preparation of the bibliography.

I thank all of my friends and colleagues who provided photographs and other figures. Those who are familiar with the first edition will note the considerable expansion of the number of figures, to include many color images of pathological conditions and other elements of morphology and biological variation. In addition, I have increased the number of data and analysis graphs, largely in order to help readers visualize research results discussed in the text. For their support in providing photographs and graphs, thanks go especially to Chris Ruff, Haagen Klaus, Kate Pechenkina, Tomasz Kozlowski, Valerie DeLeon, Sam Blatt, Megan Brickley, Rachel Ives, Leslie Williams, Sam Scholes, Cory Maggiano, Pat Lambert, Dale Hutchinson, George Milner, Charlotte Roberts, Jesper Boldsen, Eileen Murphy, Kate Domett, Scott Haddow, Bonnie Glencross, Tim White, John Verano, Tiffany Tung, Margaret Schoeninger, Deborah Bolnick, Shannon Novak, Séb Villotte, Chris Knüsel, Evan Garofalo, Jim Gosman, Richard Scott, Chris Schmidt, Melissa Zolnierz, Lesley Gregoricka, Chris Stojanowski, and Joel Irish. Kathryn Marklein provided considerable time and effort toward the development of the electronic files of the more than 160 graphs, line drawings, and photographs.

I thank my parents, the late Leon Larsen and Patricia Loper Larsen, for introducing me at a very young age to old things and the past. I thank my undergraduate professors at Kansas State University, especially my mentor and advisor, Patricia O’Brien, and Professors William Bass and Michael Finnegans, and at the University of Michigan, my PhD mentor and advisor, Milford Wolpoff, and Professors Stanley Garn, Frank Livingstone, Loring Brace, David Carlson, Michael Zimmerman, and Roberto Frisancho for their inspiration and the training I received under their collective direction. My fellowship stints at the Smithsonian Institution, undergraduate and graduate, were strongly influential in the development of my interests in bioarchaeology. I am especially grateful to Douglas Ubelaker, Dale Stewart, Lawrence Angel, and Donald Ortner for their many stimulating discussions, opportunities for research, and advice.

Since the publication of the first edition of *Bioarchaeology*, I moved to the Department of Anthropology at The Ohio State University. At Ohio State, I have...
been privileged to work with an extraordinary faculty and group of graduate students, and to have access to superb research and teaching facilities. I am grateful to the institution, my colleagues, and students for the stimulating intellectual environment that helped to make this book possible.

Columbus, Ohio
May 1, 2014
PREFACE TO THE FIRST EDITION

The writing of this book was fostered by my involvement in a series of interdisciplinary research programs undertaken in the southeastern (Florida and Georgia) and western (Nevada) United States. I thank my collaborators, colleagues, and friends who have been involved in this exciting research. With regard to fieldwork, the following individuals and projects figured prominently in the development of this book: David Hurst Thomas on St. Catherines Island, Georgia; Jerald Milanich and Rebecca Saunders on Amelia Island, Florida; Bonnie McEwan at Mission San Luis de Talimali in Tallahassee, Florida; and Robert Kelly in the western Great Basin, Nevada. A number of individuals deserve special thanks for their valuable contributions to the study of human remains from these regions: Christopher Ruff, Margaret Schoeninger, Dale Hutchinson, Katherine Russell, Scott Simpson, Anne Flesia, Nikolaas van der Merwe, Julia Lee-Thorp, Mark Teaford, David Smith, Inui Choi, Mark Griffen, Katherine Moore, Dawn Harn, Rebecca Shavit, Joanna Lambert, Susan Simmons, Leslie Sering, Hong Huynh, Elizabeth Moore, and Elizabeth Monahan.

I thank the Edward John Noble Foundation, the St. Catherines Island Foundation, Dr. and Mrs. George Dorion, the Center for Early Contact Period Studies (University of Florida), the National Science Foundation (awards BNS-8406773, BNS-8703849, BNS-8747309, SBR-9305391, SBR-9542559), and the National Endowment for the Humanities (award RK-20111-94) for support of fieldwork and follow-up analysis. Research leave given to me during the fall of 1991 while I was on the faculty at Purdue University and a fellowship from Purdue’s Center for Social and Behavioral Sciences during the spring and summer of 1992 gave me a much needed breather from teaching and other obligations in order to get a jump-start on writing this book. Preparation of the final manuscript was made possible by generous funding from the University of North Carolina’s University Research Council. I acknowledge the support – institutional and otherwise – of the University of North Carolina’s Research Laboratories of Anthropology, Vincas Steponaitis, Director.

Various versions of individual chapters and parts of chapters were read by Kirsten Anderson, Brenda Baker, Patricia Bridges, James Burton, Stephen Churchill, Robert Corruccini, Marie Danforth, Leslie Eisenberg, Alan Goodman, Mark Griffin, Gary Heathcote, Brian Hemphill, Simon Hillson, Dale Hutchinson, Anne Katzenberg, Lyle Konigsberg, Patricia Lambert, Christine Larsen, George Milner, Susan Pfeiffer, Mary Powell, Charlotte Roberts, Christopher Ruff, Shelley Saunders, Margaret Schoeninger, Mark Spencer, Mark Teaford, and Christine White. Ann Kakaliouras, Jerome Rose, and Phillip Walker generously donated their time in the reading of and commenting on the entire manuscript. I am indebted to all of the readers for their help in improving the clarity, organization, and content of the book.

The organization of the bibliographic computer database was completed by Elizabeth Monahan. Patrick Livingood helped in the preparation of figures. I thank the following colleagues for providing photographs and figures: Stanley Ambrose, Kirsten Anderson, David Barondess, Brian Hemphill, Charles Hildebolt, Dale Hutchinson, George Milner, Mary Powell, Christopher Ruff, Richard Scott, Scott Simpson, Holly Smith, Mark Teaford, Erik Trinkaus, Phillip Walker, and Tim White.

A book like this is not written without a supportive press. I thank the Syndicate of the Cambridge University Press and the Editorial Board of the Cambridge Studies in Biological Anthropology – Robert Foley, Derek Roberts, C. G. N. Mascie-Taylor, and especially, Gabriel Lasker – for their encouragement and comments, especially when I proposed the idea of writing the book and what it should contain. Most of all, I thank Tracey Sanderson, Commissioning Editor of Biological Sciences at the Press, for her help throughout the various stages, from proposal to finished book.

Chapel Hill, North Carolina
August 28, 1996