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# ESSENTIALS OF PHYSICAL ANTHROPOLOGY

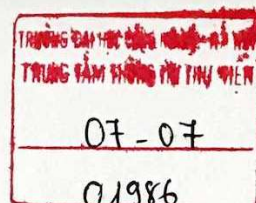
Discovering Our Origins

CLARK SPENCER LARSEN



# ESSENTIALS OF PHYSICAL ANTHROPOLOGY

Discovering Our Origins



**CLARK SPENCER LARSEN**

The Ohio State University



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# To the Instructor

## HOW THIS BOOK CAN HELP YOUR STUDENTS DISCOVER PHYSICAL ANTHROPOLOGY

### It Is about Engagement

Teaching is about engagement—connecting the student with knowledge, making it real to the student, and having the student come away from the course with an understanding of core concepts. *Essentials of Physical Anthropology: Discovering Our Origins* seeks to engage the student in the learning process. Engaging the student is perhaps more of a challenge in the study of physical anthropology than in the study of other sciences, mainly because the student has likely never heard of the subject. The average student has probably taken a precollege course in chemistry, physics, biology, or geology. Physical anthropology, though, is rarely mentioned or taught in precollege settings. Commonly, the student first finds out about the subject when an academic advisor explains that physical anthropology is a popular course that fulfills the college's natural science requirement.

Once taking the course, however, that same student usually connects quickly with the subject, because so many of the topics are familiar—fossils, evolution, race, genetics, DNA, monkeys, forensic investigations, and origins of speech, to name a few. The student simply had not realized that these separately engaging topics come under the umbrella of one discipline, the subject of which is the study of human evolution and human variability.

In writing this book, I made no assumptions about what the reader knows, except to assume that the reader—the student attending your physical anthropology class—has very little or no background in physical anthropology. As I wrote the book, I constantly reflected on the central concepts of physical anthropology and how to make them understandable. I combined this quest for both accuracy and clarity with my core philosophy of teaching—namely, engage the student to help the student learn. While most students in an introductory physical anthropology class do not intend to become professional physical anthropologists, some of these students become interested enough to take more courses. So this book is written



for students who will not continue their study of physical anthropology, those who get “hooked” by this fascinating subject (a common occurrence!), and those who now or eventually decide to become professionals in the field.

The book is unified by the subject of physical anthropology. But equally important is the central theme of science—what it is, how it is done, and how scientists (in our case, anthropologists) learn about the natural world. I wrote the book so as to create a picture of who humans are as organisms, how we got to where we are over the last millions of years of evolution, and where we are going in the future in light of current conditions. In regard to physical anthropology, the student should finish the book understanding human evolution and how it is studied, how the present helps us understand the past, the diversity of organisms living and past, and the nature of biological change over time and across geography. Such knowledge should help the student answer questions about the world. For example: How did primates emerge as a unique group of mammals? Why do people look different from place to place around the world? Why is it important to gain exposure to sunlight yet unsafe to prolong that exposure? Why is it unhealthy to be excessively heavy? Throughout their history, what have humans eaten, and why is it important to know?

I have presented such topics so that the student can come to understand the central concepts and build from them a fuller understanding of physical anthropology. Throughout the book, I emphasize hypothesis testing, the core of the scientific method, and I focus on that process and the excitement of discovery. The narrative style is personalized. Often I draw on my own experiences and those of scientists I know or am familiar with through their teaching and writing, to show the student how problems are addressed through fieldwork or through laboratory investigations.

Scientists do not just collect facts. Rather, they collect data and make observations that help them answer questions about the complex natural world we all inhabit. Reflecting this practice, *Essentials of Physical Anthropology: Discovering Our Origins* is a collection not of facts for the student to learn but of answers to questions that help all of us understand who we are as living organisms and our place in the world. Science is a way of knowing. It is a learning process. In this way, it is liberating.

## HOW THE BOOK IS ORGANIZED

The book is divided into two parts. Following an introductory overview of anthropology and physical anthropology, Part I presents the key principles and concepts in biology,

especially from an evolutionary perspective. This material draws largely on the study of living organisms, including humans and nonhuman primates. Because much of our understanding of the past is drawn from what we have learned from the present, this part lays the foundation for the presentation in Part II—the past record of primate and human evolution. In putting the record of the living up front, this book departs from the style of most other introductory physical anthropology textbooks, which start out with the earliest record and end with the living. This book takes the position that most of what we learn about the past is based on theory and principles learned from the living record. Just as all of Charles Darwin’s ideas were first derived from seeing living plants and animals, much of our understanding of function and adaptation come from living organisms as models. Therefore, this book views the living as the window onto what came before. Individual chapters, however, can be taught in any order.

Part II presents evidence of the past, covering more than 50,000,000 years of evolution. Most textbooks of this kind end the record of human evolution at about 25,000 years ago, when modern *Homo sapiens* evolved worldwide. This textbook also provides the record since the appearance of modern humans, showing that important biological changes occurred in just the last 10,000 years, largely relating to the shift from hunting and gathering to the domestication of plants and animals. Food production was a revolutionary development in the human story, and Part II presents this remarkable record, including changes in health and well-being that continue today. A new subdiscipline of physical anthropology, bioarchaeology, is contributing new and profound insights into the last 10,000 years, one of the most dynamic periods of human evolution.

## AIDS TO THE LEARNING PROCESS

Each chapter opens with a *vignette* telling the story of one person’s discovery that relates directly to the central theme of the chapter. This vignette is intended to draw your students into the excitement of the topic and to set the stage for the Big Questions that the chapter addresses.

**BIG QUESTIONS** are introduced early in the chapter to help your students organize their reading and understand the topic.

**CONCEPT CHECKS** are scattered throughout each chapter and immediately follow a major section. These aids are intended to help your students briefly revisit the key points they have been reading.