

Book Review

Human Evolutionary Biology. Edited by Michael P. Muehlenbein, New York, Cambridge University Press, 2010, 624 p, \$130.00 (cloth), \$70.00 (paper).

According to its editor, the goal of *Human Evolutionary Biology* is to provide a detailed, up-to-date set of reviews on key topics related to human variation and adaptation. The editor, Michael Muehlenbein, has assembled an outstanding group of authors, many of whom are leaders in their respective areas of human biology. However, as with virtually all edited volumes of such length and scope, there is some unevenness across the chapters in terms of quality and level of detail provided, and several of the contributions are quite similar to versions that have appeared in other collections. This is not entirely negative, since many of these writings have been updated and the current volume collects all these contributions into one edited book.

As the stated target audience for the text is professionals, graduate students, and advanced undergraduates, most of the chapters will be out of reach to all but the most advanced of undergraduate students. This important volume, however, will be a great asset to graduate students and professionals because its thorough and accessible reviews summarize the state of the field and will help stimulate new research in human biology.

Human Evolutionary Biology is divided into five sections. The first section concentrates on theory and methods, and begins with an excellent review chapter on evolutionary theory (Chapter 1) by biologist Douglas Futuyma. Other chapters in this section focus on studying adaptive processes in humans, the history of the development of the field of human biology, and ethical issues in scientific research. This section also includes a collection of chapters on methods, including genetics, demography, anthropometry, and energetics. The chapter on evolutionary endocrinology (Chapter 8) by Richard Bribiescas and Michael Muehlenbein is particularly noteworthy in that it introduces readers to the use of hormone analysis in human biology, details the foundational role that hormones play in facilitating life history trade-offs, and describes the relevant methodological issues regarding their measurement and use.

The second section discusses the myriad dimensions of phenotypic and genotypic variation in contemporary humans, including chapters on body size and shape, skin color, and behavior, as well as several chapters on genetic markers. Particularly useful in this section is Tom Brutsaert's chapter on high altitude adaptation (Chapter 11), which provides an excellent, up-to-date review of the topic and strikes a nice balance between easy-to-read introduction and comprehensive summary of recent research in the field. As such, it will be useful not only to those new to this area (e.g., beginning graduate students) but also to professionals who want both a review of high altitude physiology and an updated treatment of the multiplicity of ways through which humans have adapted to this environmental stressor.

The third section concentrates on reproduction, and includes two chapters on mate choice, as well as individual chapters on aspects of female and male reproductive

ecology. David Schmitt's chapter on mate choice in humans (Chapter 17) stands out as an exceptionally well-written introduction to the topic, which will appeal both to readers unfamiliar with the subject as well as to professionals looking for a review of current research in this area. A key focus of the chapter is reviewing evidence that humans have evolved a pluralistic mating repertoire, in which biological and sociocultural factors (e.g., health, education, and resource availability) shape how and when women and men shift mating preferences between short- and long-term strategies.

The fourth section is oriented towards human growth and development, and includes chapters on the evolution of human growth and on ecologically driven variation in ontogeny. Mark Flinn's chapter on hormonal adaptations to social challenges (Chapter 24) will be particularly interesting and useful to human biologists for its sophisticated discussion of the evolution of the neuroendocrine basis of human sociality. The chapter provides an excellent discussion of the distinctive suite of traits that define humans (e.g., large brain size, extensive biparental care, and concealed ovulation) and describes how these characteristics were shaped by our extreme sociality and, in particular, the social competition that resulted in a social arms race in our species. The chapter is essential reading for the growing number of human biologists interested in the health effects of chronic psychosocial stress.

The final section of the volume concentrates on health and disease, and includes chapters on infectious disease, chronic degenerative conditions, mental disorders, senescence, and cultural contributors to health. In a particularly timely review, the chapter on acculturation and health (Chapter 34) by Thomas McDade and Colleen Nyberg stands out by providing a comprehensive yet accessible introduction to the subject. The authors discuss what we know about how lifestyle transitions shape health, reviewing the effects of cultural changes on different aspects of health, disease, and well-being (e.g., child growth, chronic degenerative diseases, and mental health), and providing a geographic perspective that highlights research in the Arctic, Pacific Islands, and Latin America. This chapter is a major contribution in part because it emphasizes the complex ways in which cultural and economic changes influence health, and shifts the approach away from the simplistic question of whether acculturation is good or bad for health.

Human Evolutionary Biology ventures beyond the traditional approach in human biology in two key ways. First, this volume differs from previous human biology texts in its overt focus on the rapidly expanding field of evolutionary medicine. The book includes chapters by several prominent scientists from outside human biology, including Boyd Eaton on chronic degenerative diseases (Chapter 28), infectious causes of chronic disease by Paul Ewald (Chapter 29), and on the field of evolutionary psychiatry by Brant Wenegrat (Chapter 32). A major benefit of this volume is that, unlike several recent (and excellent) volumes on evolutionary medicine (Stearns and Koella, 2008) and (Trevathan et al., 2008)—Muehlenbein's book contextualizes its topical treatment of current evolutionary medicine research with background chapters on methods and theory in human biology.

Second, as most human biology texts such as (Stinson et al., 2000) concentrate primarily on adaptation and variation in contemporary human physiology, Muehlenbein's

volume expands this scope to discuss adaptive dimensions of human behavior. This includes notable chapters by Peter Gray on endocrinology and human behavior (Chapter 16), and by Jane Lancaster and Hillard Kaplan on embodied capital and extrasomatic wealth (Chapter 26). Another chapter, by Ben Campbell, expands this treatment further by discussing brain physiology and function (Chapter 25), and includes a sophisticated discussion of the relationships among brain metabolism, neural plasticity, and development. Overall, these chapters and others (e.g., by Schmitt) broaden the field of human biology beyond its existing boundaries and help to unite it with its sister disciplines of behavioral ecology and evolutionary psychology. One limitation of the current volume, however, is that no introductory or summary chapter was provided that integrates these concepts and approaches. A crucial point that is not made explicit is that although the standard topical foci, levels of explanation, and methodological tools differ somewhat between human biology, behavioral ecology, and evolutionary psychology (as well as evolutionary medicine), these fields are united by their fundamental basis in evolutionary theory. Although

Muehlenbein's book would have benefitted from clearly articulating this critical point, the volume takes an extremely important step towards the conceptual integration of knowledge across interdisciplinary boundaries and signals the emergence of the field of human evolutionary biology.

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