

This book will be of considerable value to readers interested in stress, sex differences, and environmental condition-dependence. The core hypothesis addressed has considerable potential explanatory power, although few if any study systems have been investigated in enough fine empirical detail, from genes to development, morphology, behavior, fitness, and evolutionary history, to test its assumptions and predictions to a thoroughly satisfying degree. These limitations will constrain the usefulness of the volume to many people with interests in evolutionary biology or health. To others with such inclinations, one hopes, may come challenge and inspiration to collect new data that closes the loops connecting evolution with sex and age-associated vulnerabilities. For the study of human well-being in particular, such an endeavor is a more than worthy goal.

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PRINCIPLES OF EVOLUTIONARY MEDICINE. *Second Edition.*

By Peter Gluckman, Alan Beedle, Tatjana Buklijas, Felicia Low, and Mark Hanson. Oxford and New York: Oxford University Press. \$115.00 (hardcover); \$59.95 (paper). xiv + 378 p.; ill.; index. ISBN: 978-0-19-966392-7 (hc); 978-0-19-966393-4 (pb). 2016.

The first edition of this book, published in 2009, is the most widely used textbook of evolutionary medicine—or evolution, medicine, and public health, as the field is now known. This new edition maintains the structure of the first edition but brings the text up to date and adds some important new information. First, the volume presents aspects of evolutionary biology that are especially relevant to medicine, including genetics and other forms of inheritance, evolutionary developmental biology, life-history theory, human evolution, and the origins of human diversity. A transition chapter, new to this edition, discusses principles of evolutionary medicine and provides an evolutionary classification of disease processes. Finally, the authors show how an evolutionary perspective can enrich our understanding of problematic issues in human biology and disease, including reproduction, nutrition and metabolism, infection and immunity, psychology and behavior, and cancer. The new chapter on cancer corrects a serious omission in the first edition and reflects the growing understanding that cancers evolve by a Darwinian process of variation and selection. Because cancers evolve during the course of a patient's disease and because their evolution is affected by medical interventions, the evolution of cancers, like the evolution of antibiotic resistance, provides a

convincing demonstration of the importance of evolutionary thinking in medicine.

The discussion of cancer illustrates another valuable feature of this book, its increased emphasis on public health. This chapter contains a good review of the epidemiology of cancer, including cancers secondary to infection, skin cancers in light-skinned people who move to tropical areas, and the effects of changing patterns of reproduction and breastfeeding on the incidence of breast cancer. Evolutionary biology is concerned with populations and with changes in populations over time, and so is especially relevant to public health. Moreover, it provides a framework for linking public health concerns to clinical medicine, which should benefit community health as well as the health of individual patients.

This second edition is about 25% longer than the first. Some of this is necessary because of increased coverage, but some reflects unnecessary redundancy and a lack of rigor in pruning extraneous material. The relationship between hemoglobin S and resistance to malaria is mentioned five times, in five different contexts. The individual entries repeat basic information and are not summarized to give readers a deeper understanding of this fascinating issue.

It is commonplace to complain about the price of books, but I was happy to see that the second edition is less expensive than the first. The lowered price is not due to the recent decline in the value of the pound. Rather, I suspect it reflects the publisher's realization that this volume will appeal to a broad readership of students and faculty in a variety of disciplines, and so will have healthy sales. And well it should. I recommend this book highly as a clear and accessible introduction to the growing field of evolution, medicine, and public health.

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