Ecological and Environmental Physiology of Insects by Jon F. Harrison, H. Arthur Woods, and Stephen P. Roberts
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ferent point of view, with scattered highlights of
clear and fascinating physical explanations of bio-
logical phenomena.
Sheila Patek, Biology, University of Massachu-
setts, Amherst, Massachusetts

Ecological and Environmental Physiology
of Insects. Ecological and Environmental Physiology
Series (EEPS), Volume 3.
By Jon F. Harrison, H. Arthur Woods, and Stephen P.
Roberts. Oxford and New York: Oxford University
Press. $117.00 (hardcover); $62.99 (paper). ix +
378 p.; ill. ISBN: 978-0-19-922595-1 (hc);
The field of ecological physiology, which examines
how organisms respond to environmental varia-
tion, is of increasing importance in light of anthro-
pogetic climate change. This book, written by three
senior researchers at the cutting edge of
their fields, focuses on how insects, the dominant
terrestrial heterotrophs, do this.
The book is organized into eight chapters. The
first two are general introductions to the ecologi-
cal importance of insects, their evolutionary his-
tory and diversity, and principles of functional
anatomy and physiology. This introduction makes
the volume accessible to anyone interested in how
organisms work. The next four chapters, the heart
of the book, address the four main environmental
factors that affect insects: temperature, water, nu-
trition, and oxygen. Each of these chapters starts
with a section entitled Defining the Problem,
which provides theoretical and functional back-
ground for the rest of the chapter. A clever tech-
niques and applications chapter follows, which is a
basic experimental guide on how to collect physi-
ological data along with potential pitfalls. The fi-
nal chapter poses explicit “big questions” for fu-
ture directions in insect ecological physiology.
The fact that all three authors are strong exper-
imentalists is evident throughout the text. One of
its strengths is that topics are presented in a
hands-on way, such that even when addressing
physiological subsystems, it is easy to see how they
relate to the whole insect, a common weakness of
many physiology textbooks. The writing style is
particularly engaging, making the subject matter
accessible to beginning students, while sophisti-
cated enough to inform experienced researchers.
The figures are clear, crisp, and provide enough
detail to make the point without clutter. If there is
one weakness, it is that the book is too short! I highly
recommend this volume to anyone with an interest
in understanding how organisms cope with their
environment, laboratory or field, insect or not.
Goggy Davidowitz, Entomology, University of
Arizona, Tucson, Arizona

CELL AND MOLECULAR BIOLOGY

INTEGRATED MOLECULAR EVOLUTION.
By Scott Orland Rogers. Boca Raton (Florida): CRC
Press (Taylor & Francis Group). $99.95. xv +
359 p. + 31 pl.; ill.; index. ISBN: 978-1-4398-
One of the most important concepts in biology is
the evolution of the biosphere at a macroscopic
and microscopic level. The most visible aspect of
evolution is macroscopic, such as morphological
and behavioral diversity, adaptability to many dif-
ferent environments, and variability in physiologi-
cal and metabolic characteristics of organisms
(just to name a few). However, none of this varia-
tion would be possible if evolution was not acting
at the genetic (microscopic) level. Therefore, to
truly understand evolutionary processes and mecha-
nisms, the first step is to understand the evolution of
genes and genomes. This book captures the com-
plexity of life from its origin to its increasing com-
plexity.
This volume can be roughly organized into two
sections: one (Chapters 1–12) that addresses con-
cepts of introductory and molecular biology (e.g.,
origin of life, central dogma, gene families) and a
second one (Chapters 13–18) dedicated to the
description of genomes and their properties. The
style of the book is clear and simple, which makes it
suitable for undergraduate education. Despite
much of the first part being devoted to basic in-
 introductory concepts, the author addresses more
complex concepts such as the evolution of gene
families (Chapter 11) and the reconstruction of
evolutionary histories (Chapter 12). The informa-
tion in these two chapters allows a basic under-
standing of the complex approaches routinely
used in evolutionary analyses that can become a
solid basis to support more specialized knowledge.
The second half of the volume has a somewhat
unusual structure in which genomes are described
not by phylogenetic relatedness, but by size. It is an
interesting approach as it shows evolutionary par-
allels dictated by size instead of (or in addition to)
phylogenetic constraints. Within this section, two
of the chapters are dedicated to interspecies rela-
tionships, whether beneficial, neutral, or detri-
mental (Chapters 16 and 17). These two chapters
pave the way to address the symbiotic origin of
eukaryotes, which are discussed in the last chapter.
Most of the figures in this section are pie charts
that summarize the functional diversity of the
genomes in a genome. Although functional and or-