

## Book Reviews

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*Elements of Evolutionary Genetics*. B. Charlesworth & D. Charlesworth. Roberts & Company. 2010. 768 pages. ISBN 9780981519425. Price \$80 (hardback).

On being asked to review the *Elements of Evolutionary Genetics* by Brian and Deborah Charlesworth, I felt a bit like a minor apostle being asked to peer review the New Testament. (I assume the New Testament was peer reviewed?) The *Elements of Evolutionary Genetics* is a work of biblical proportions for the age of genetics.

For much of the 20th Century, evolutionary genetics was an arcane field populated by nerdy mathematically inclined biologists. However, population genetics provides the tools necessary for analysis of gene sequence data, in particular the wealth of information now available on population variation in humans and other ‘model’ species. The human genome sequence, originally trumpeted as the ‘blueprint’ for humanity, actually makes little sense without an understanding of how and why gene sequences vary between individuals, populations and species. In the face of the avalanche of gene sequence data, population genetics has recently begun to take centre stage in biology.

In this context, the publication of this book is very timely. The Charlesworths are leaders in the field, and have covered virtually all areas of population genetic analysis, starting with the basics. Early chapters deal with the measurement of genetic variability, the action of selection and maintenance of variation. Complexity is added with succeeding chapters – such as mutation and migration, the influence of stochastic processes in finite populations and spatial structure. This gradual building from basic principles, with the simpler concepts at the beginning of each chapter leads the reader through the field.

I especially enjoyed the section on ‘Testing for selection’, which outlines the multitude of methods now available for detecting the influence of natural selection in DNA sequence data – I shall certainly be recommending sections such as this for graduate and undergraduate student reading in the future. If I have any grumble, it is that inevitably in such a

wide-ranging book there was not enough space for any detailed critique of the topics described. In several places, I was left wanting more.

As one might expect from the authors, the book contains lots of equations. Nonetheless, the less mathematically able, such as myself, can still take a great deal from it. The text is clearly written and easy to follow, with the more complex maths set aside in text boxes. Unlike in some population genetic texts, here theory is closely intertwined with empirical examples. A nice example is the section on the evolution of sex, where case studies, especially from the complex world of plant sex, are used to highlight the theoretical ideas.

So who is likely to read this book? It is described as being aimed at ‘advanced undergraduates’, and it will certainly be a useful text for advanced courses in evolutionary genetics. However, I think the book will really come into its own at graduate level, where there is no other comparable work that covers such a broad range of topics. I guess that few will read it all the way through from start to finish, but anyone interested in evolution or population genetics should have a copy on their shelves. I certainly anticipate that I will use it as a reference book, for the definitions and principles underlying key concepts are more clearly outlined here than in any other single volume. In a fast-moving field, I anticipate that this book will be a key textbook for many years to come.

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*Presentation Skills for Scientists*. E. Zanders & L. MacLeod. Cambridge University Press. 2010. 80 pages. ISBN 9780521741033. Price £19.99 (paperback with DVD-ROM).

The last two decades have witnessed an explosion of scientific information in an academic environment that is becoming ever more complex and competitive.