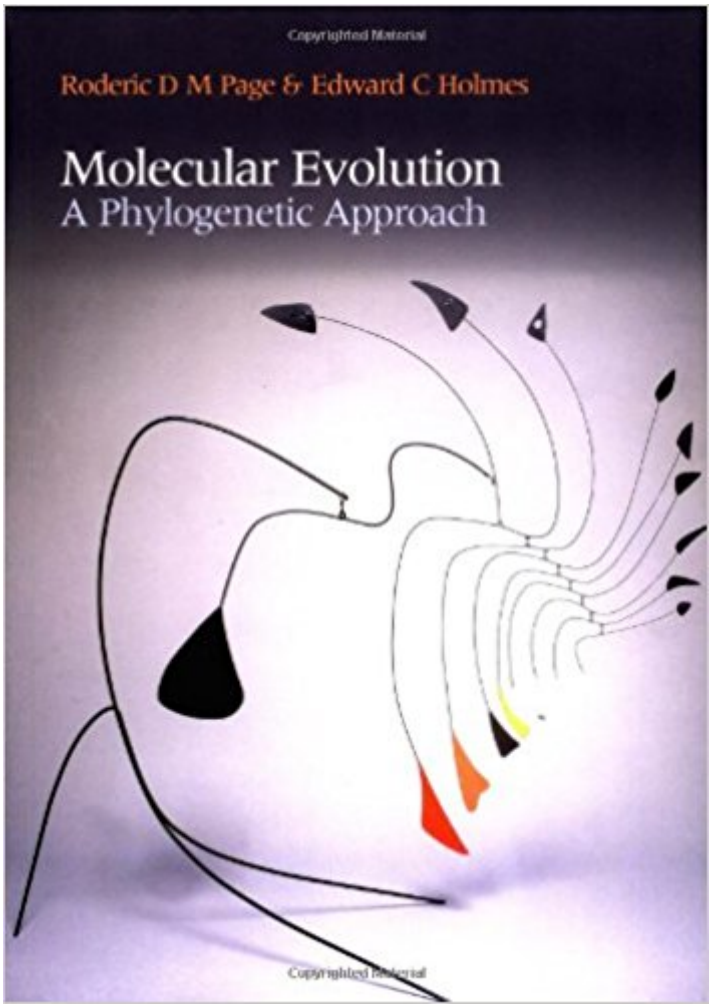
Molecular Evolution: A Phylogenetic Approach



Synopsis

The study of evolution at the molecular level has given the subject of evolutionary biology a new significance. Phylogenetic ’trees’ of gene sequences are a powerful tool for recovering evolutionary relationships among species, and can be used to answer a broad range of evolutionary and ecological questions. They are also beginning to permeate the medical sciences. In this book, the authors approach the study of molecular evolution with the phylogenetic tree as a central metaphor. This will equip students and professionals with the ability to see both the evolutionary relevance of molecular data, and the significance evolutionary theory has for molecular studies. The book is accessible yet sufficiently detailed and explicit so that the student can learn the mechanics of the procedures discussed. The book is intended for senior undergraduate and graduate students taking courses in molecular evolution/phylogenetic reconstruction. It will also be a useful supplement for students taking wider courses in evolution, as well as a valuable resource for professionals. First student textbook of phylogenetic reconstruction which uses the tree as a central metaphor of evolution. Chapter summaries and annotated suggestions for further reading. Worked examples facilitate understanding of some of the more complex issues. Emphasis on clarity and accessibility.

Book Information

Paperback: 352 pages

Publisher: Wiley-Blackwell; 1 edition (January 15, 1998)

Language: English

ISBN-10: 0865428891

ISBN-13: 978-0865428898

Product Dimensions: 6.8 x 0.8 x 9.7 inches

Shipping Weight: 1.9 pounds (View shipping rates and policies)

Average Customer Review: 3.9 out of 5 stars 9 customer reviews

Best Sellers Rank: #350,260 in Books (See Top 100 in Books) #104 inÃ Â Books > Science & Math > Evolution > Organic #174 inÃ Â Books > Medical Books > Basic Sciences > Cell Biology #318 inÃ Â Books > Science & Math > Biological Sciences > Biology > Molecular Biology

Customer Reviews

The study of evolution at the molecular level has given evolutionary biology a new impetus. Phylogenetic ’trees’ of gene sequences are a poweful tool for recovering evolutionary relationships among species, and can be used to answer a broad range of evolutionary and ecological questions. They are also beginning to permeate the medical sciences. In this book, the authors approach the

study of molecular evolution with the phylogenetic tree as a central metaphor. This will equip students and professionals with the ability to see both the evolutionary relevance of molecular data, and the significance evolutionary theory has for molecular studies. The book is accessible, yet sufficiently detailed and explicit that the student can learn the mechanics of the procedures discussed. The book is intended for senior undergraduate and graduate students taking courses in molecular evolution/phylogenetic reconstruction. It will also be a useful supplement for students taking wider courses in evolution, as well as a valuable resource for professionals.

it is very easy to understand

Very good, with basics and advanced topics, This book will allow you to understand the principles of phylogeny in a neutral view.

The book was in great condition except there were about 8 or 9 blank pages in the middle of the book. Luckily I have a friend with the same book so I just made copies of the missing pages and taped them into my book.

Although molecular phylogenetic analysis can be extremely complex, this reference provides an introduction to the subject that is straightforward to read. The reference begins with consideration of trees, which are structures used to model actual evolutionary relationships between genes or entire lifeforms. It then provides an introduction to molecular and population genetics. Coding as well as noncoding DNA (tandem repeats, transposable elements, retroviruses, spacer DNA) is considered. The reference then considers how genetic change can be measured, followed by how we can deduce molecular phylogenies. The validity of the molecular clock is then considered, along with a discussion of the neutralist-selectionist debate. The reference finally considers how different phylogenies can be combined to determine actual phylogeny, reconciled trees, and rates of diversification.

I’m new to molecular evolution and have been confused with various terms and concepts (e.g., cladogram vs. phylogram vs. dendrogram, plesiomorphy vs. apomorphy vs. autapomorphy vs. synapomorphy vs. homoplasy, etc.). Reading other books that try to explain these concepts mostly in words only added more confusion.Every page in this book contains highly illustrative figures that accompanies well written text. Of course, not all sections are not immediately clear to understand,

and I would need to read other books as well.If you are new to molecular evolution, start with this book along with any other books that may suit your particular need.

My graduate advisor handed me his copy of the book and advised that I read Chapter 3. I read the chapter a couple of times, but I was reluctant to give the book back. I found it an invaluable reference on more than one term paper or thesis proposal. I had to have my own copy to avoid any potential chiding he may have given. The book is both informative and readable, doing a good job of explaining the material.

If you’re not familiar with DNA sequences analysis and inferring phylogenies, this book is a must read (as far as I know the only introduction book to the field). But it’s a bit outdated (Bayesian analysis not covered).

This book is very well written and a handy tool for anyone who is new to molecular evolution. Nice diagrams and concise chapters. The authors know how to break up the sometimes demanding ideas into appropriate bites. Perfect for grad students and senior undergrads.

Genes, Genomes, Molecular Evolution, Databases and Analytical Tools