



Cover illustration: a tree with reticulations,
symbolizing a rooted phylogenetic network.
Courtesy of Daniel Huson.

Phylogenetic Networks

The evolutionary history of species is traditionally represented using a rooted phylogenetic tree. However, when reticulate events such as hybridization, horizontal gene transfer or recombination are believed to be involved, phylogenetic networks that can accommodate non-treelike evolution have an important role to play.

This book provides the first inter-disciplinary overview of phylogenetic networks. Beginning with a concise introduction to both phylogenetic trees and phylogenetic networks, the fundamental concepts and results are then presented for both rooted and unrooted phylogenetic networks. Current approaches and algorithms available for computing phylogenetic networks from different types of datasets are then discussed, accompanied by examples of their application to real biological datasets. The book also summarizes the algorithms used for drawing phylogenetic networks, along with the existing software for their computation and evaluation.

All datasets, examples and other additional information and links are available from the book's companion website at: www.phylogenetic-networks.org.

'... essential reading for any scientist or student seeking to understand how genomic data can be used to represent and study the intricate "web of life".'

Mike Steel, *University of Canterbury*

'This textbook, by one of the leaders of the field... provides a mathematically rigorous introduction to one of the most exciting and beautiful research areas in computational biology: phylogenetic networks. The text is clear and provides all the necessary biology background; it should be accessible to graduate students (or upper-division undergraduates) in mathematics, computer science or statistics.'

Tandy Warnow, *The University of Texas at Austin*

'This wonderfully accessible book is by far the most thorough and up-to-date treatment of phylogenetic networks about. This volume is a must for researchers working with phylogenetic networks. It is for an advanced college audience. Beautifully organized and clearly written, it really fills a void.'

Bill Martin, *University of Duesseldorf*

Accompanying software:



SplitsTree4, a program for unrooted phylogenetic trees and networks, available from: www.splitsree.org



Dendroscope2, a program for rooted phylogenetic trees and networks, available from: www.dendroscope.org