



'In many respects this is a textbook for a discipline that is yet to develop. It should bring home to ecologists, however, that the study of genomes has immediate relevance to our field, and it illustrates the ways in which this advancing science can contribute to the work and the questions that already engage ecologists.'

Bulletin of the British Ecological Society

An Introduction to Ecological Genomics focuses on three fundamental ecological questions:

1. What is the relationship between community structure and ecological function in ecosystems?
2. How can the variation in life-history patterns among species be explained from interaction between the genome and the environment?
3. To what extent can the limits of the ecological niche be understood from molecular stress responses?

Each of these questions is evaluated in the light of recent advances in genomics research, paying particular attention to data obtained from sequencing and screening of environmental genomes (metagenomics), microarray-based transcription profiling, and gene expression directed by signal-transduction pathways. The chapters covering these key areas are preceded by discussions of genomics methodology and comparative genomics, and the book concludes with a chapter on integrative approaches such as ecological control analysis. An issue receiving particular attention is the genomic study of model species and the extrapolation of data obtained from them to an ecological context. The authors also provide a comparative survey of the properties of genomes (genome size, gene families, synteny, and polymorphism) for prokaryotes as well as the main eukaryotic models.

This book incorporates a multitude of recent examples from microbiology, plant science, and zoology, drawing together a scattered literature in the first synthesis of the new and exciting field of ecological genomics. It will be of particular interest to senior undergraduate and graduate level students, as well as researchers in the fields of ecology, evolutionary biology, genetics, and molecular biology.

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