

Preface

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CHRS LINE 2173 – CHRS, Populations, Adaptation, Adaptation, Univariate
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Abstract

Integrating biological system – do not evolve independently, as many studies have shown

The third volume of “Genome Dynamics” is dedicated to “Gene and Protein Evolution”. Relatively recently, the genomics era has completely changed our way to apprehend evolution, particularly through the emergence of comparative genomics, a discipline allowing the analysis of complete genomes and biological processes over huge periods of time. In this volume, a panel of internationally recognized experts present and discuss an update of the evolutionary processes at the basis of organismal diversification and complexity, and review the mechanisms leading to the acquisition of new traits and new functions. Different levels of evolution will be considered, from internal modules in genes and proteins to interactomes and biological networks, with integration of the influence of both the genomic environment and the ecological context. Particular emphasis will be given to the origin of novel genes and gene functions, as well as to the evolutionary impact of the duplication of genetic information, with several chapters devoted to transposable elements.

All papers published in Genome Dynamics are reviewed according to classical standards. I would like to thank all contributors and referees involved in this book, Michael Schmid and his team, as well as Karger Publishers for their invaluable help during the preparation of this volume.

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Lyon, June 2007