



Our ever-increasing knowledge of whole genome sequences is unveiling a variety of structures and mechanisms that impinge on current evolutionary theory. The origin of species, the evolution of form, and the evolutionary impact of transposable elements are just a few of the many processes that have been revolutionized by ongoing genome studies. These novelties, among others, are examined in this book in relation to their general significance for evolution, emphasizing their human relevance. The predominance of non-coding DNA in the human genome, the long-term adaptive role of so-called 'junk DNA' in the evolution of new functions, and the key evolutionary differences that define our humanity are just some of the controversial issues that this book examines in the context of Darwinian evolution. The author's principle intention is to show

that whilst genomics is revealing new and previously unanticipated mechanisms and sources of variability that must be incorporated into evolutionary theory, there is no reason to dismiss the role of natural selection as the mechanism that sorts out these potentialities. In other words, this genome potential provides new possibilities (and also constraints) for evolution, but the realization of this potential is driven by natural selection.

This advanced textbook is suitable for graduate level students taking related courses in departments of genetics and evolution, as well as professional evolutionary biologists seeking a comprehensive and authoritative overview of this rapidly expanding field (especially those interested in the present wave of attempts at discrediting Darwinian arguments under allegations of contradictory genomic data). By providing an updated historical and conceptual account of evolutionary theory in the light of genome science, it will also be of interest and use to a broader audience of non-evolutionary scientists and an even more general readership — enlarging and updating their view on evolution.



ANTONIO FONTDEVILA is an evolutionary biologist who is best known for the work produced by his group on the evolutionary role of hybridization in transposable element mobilization and reproductive isolation. His research work has also centred on the evolutionary genetics of colonization and the measurement of fitness in natural populations using *Drosophila* species as a model system. He is currently Emeritus Professor of Genetics of the Universitat Autònoma de Barcelona, Spain.

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