



## METADATA

**Title:** Fundamentals of Evolutionary Biology

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### Abstract

The book addresses the fundamental principles of Evolutionary Biology, specifically tailored for undergraduate teaching. It begins by outlining the objections to the theory of Evolution and the evidence that supports it, presenting Evolution both as a scientific theory and as the unifying theory of biology. The book then describes the basic principles of population genetics, starting with an analysis of the Hardy-Weinberg equilibrium. It describes how various evolutionary forces, such as natural selection, random genetic drift, mutation, and migration, drive the evolution of populations. Special cases of natural selection, including selection against the recessive or dominant allele, overdominance, and frequency-dependent selection, are thoroughly examined. Additionally, the book

briefly explores how different evolutionary forces interact within populations, such as the combination of selection and mutation. The role of inbreeding in evolution and the dynamics of population structure are discussed, along with linkage disequilibrium and the significance of recombination in evolution. A chapter focuses on the genetics of quantitative traits and artificial selection. Also, the principles of sociobiology are analyzed through the lens of altruistic and conflict behaviors at both the organismal and genetic levels. The book covers sexual selection, the evolution of sex, and the principles of speciation. It concludes with a discussion on molecular evolution, including phylogeny and the interplay between selection and random genetic drift at the molecular level.

