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REFERENCESConstraints on Variation from Genotype through Phenotype to Fitness; INTRODUCTION; I. RNA EVOLUTIONARY MODEL; II. EVOLVING CONSTRAINTS ON VARIATION IN RNA; III. MECHANISTIC CONSTRAINTS; IV. EPISTATIC CONSTRAINTS; V. VIABILITY CONSTRAINTS; VI. MODULARITY: A WAY OUT OF THE CONSTRAINTS; ACKNOWLEDGMENTS; REFERENCES; Developmental Origins of Variation; INTRODUCTION; I. DOES INTRINSIC DEVELOPMENTAL VARIATION EXIST?; II. INTRINSIC VARIATION IN DIFFERENT ENVIRONMENTS; III. POTENTIAL ORIGINS OF INTRINSIC DEVELOPMENTAL VARIATION; IV. AN EXAMPLE OF NOISE IN EUKARYOTIC TRANSCRIPTION
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XV. THE FUTURE FOR STUDIES OF CANALIZATION

Sommario/riassunto

Darwin's theory of evolution by natural selection was based on the observation that there is variation between individuals within the same species. This fundamental observation is a central concept in evolutionary biology. However, variation is only rarely treated directly. It has remained peripheral to the study of mechanisms of evolutionary change. The explosion of knowledge in genetics, developmental biology, and the ongoing synthesis of evolutionary and developmental biology has made it possible for us to study the factors that limit, enhance, or structure variation at the level of an