

1. Record Nr.	UNINA9910953509103321
Titolo	Variation // edited by Benedikt Hallgrímsson, Brian Hall
Pubbl/distr/stampa	Amsterdam ; ; Boston, : Elsevier Academic Press, c2005
ISBN	1-280-63060-4 9786610630608 0-08-045446-1
Edizione	[1st ed.]
Descrizione fisica	1 online resource (594 p.)
Altri autori (Persone)	HallgrímssonBenedikt HallBrian K <1941-> (Brian Keith)
Disciplina	576.5/4
Soggetti	Variation (Biology)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Variation; Variation; CONTENTS; Variation and Variability: Central Concepts in Biology; REFERENCES; Variation from Darwin to the Modern Synthesis; INTRODUCTION; I. VARIATION BEFORE DARWIN; II. DARWIN AND VARIATION; III. ALTERNATIVE THEORIES OF VARIATION AND EVOLUTION; IV. NEO-DARWINISM; V. THE EVOLUTIONARY SYNTHESIS; VI. CONCLUSIONS; REFERENCES; The Statistics of Variation; ABSTRACT; INTRODUCTION; I. ABSOLUTE VARIATION: UNIVARIATE CASE; II. ABSOLUTE VARIATION: MULTIVARIATE CASE; III. RELATIVE VARIATION: UNIVARIATE CASE; IV. RELATIVE VARIATION: MULTIVARIATE CASE; V. DIMENSIONALITY OF VARIATION VI. TIGHTNESSVII. MEASUREMENT ERROR AND SINGLE SPECIMENS; REFERENCES; Landmark Morphometrics and the Analysis of Variation; INTRODUCTION; I. COORDINATE DATA AND THE COORDINATE SYSTEM; II. THE GENERAL PERTURBATION MODEL FOR LANDMARK VARIATION; III. PROPER ELIMINATION OF NUISANCE PARAMETERS USING A COORDINATE SYSTEM INVARIANT METHOD OF ESTIMATION; IV. ADDING ASSUMPTIONS TO THE PERTURBATION MODEL; V. CONCLUSIONS; ACKNOWLEDGMENTS; REFERENCES; Variation in Ontogeny; INTRODUCTION; I. MEASURING VARIATION: A CASE STUDY; II. IMPLICATIONS FOR STUDIES OF VARIATION; III. CONCLUSIONS; ACKNOWLEDGMENTS

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Constraints 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
V. NOISY BICOID GENE EXPRESSION IN FRUIT FLIES
VI. NOISE IN ASYMMETRY PRODUCTION; VII. NOISY IMPLICATION FOR EVOLUTION; VIII. NETWORKS; IX. MORPHOGENETIC FIELDS: A POTENTIAL SOURCE OF VARIATION; X. IMPLICATIONS; XI. SUMMARY; ACKNOWLEDGMENTS; REFERENCES; Canalization, Cryptic Variation, and Developmental Buffering: A Critical Examination and Analytical Perspective; INTRODUCTION; I. A REVIEW OF THE REVIEWS; II. EMPIRICAL CONCERNS FOR THE STUDY OF CANALIZATION; III. DEFINITIONS OF CANALIZATION; IV. REACTION NORM OF THE MEAN (R_xNM) DEFINITION OF CANALIZATION
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
