1. Record Nr. UNINA9910765713603321

Autore	Schneider Richard A
Titolo	Cells in evolutionary biology : transLating genotypes into phenotypes - past, present, future / / edited by Brian K. Hall and Sally A. Moody
Pubbl/distr/stampa	Taylor & Francis, 2018 Boca Raton, FL : , : CRC Press, an imprint of Taylor and Francis, , 2018
ISBN	1-351-65202-8 1-315-15596-6 1-4987-8787-8
Edizione	[First edition.]
Descrizione fisica	1 online resource (295 pages)
Collana	Evolutionary cell biology
Disciplina	572.838
Soggetti	Cell Biology Natural History Zoology LIFESCIENCEnetBASE SCIENCE / Life Sciences / Evolution NATURE / Animals / General Evolution, Molecular Cell Physiological Phenomena - genetics Genetic Association Studies Genotype Phenotype
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	chapter 1 The Role of Cells and Cell Theory in Evolutionary Thought, circa 1840-1872 -- chapter 2 Germ Cells and Somatic Cells in Evolutionary Biology: August Weismann's Germ Plasm Theory -- chapter 3 Cell Lineages in Ontogeny and Phylogeny from 1900 -- chapter 4 Protists and Multiple Routes to the Evolution of Multicellularity -- chapter 5 Symbiosis in Eukaryotic Cell Evolution: Genomic Consequences and Changing Classification -- chapter 6 Cellular Signaling Centers and the Maintenance and Evolution of Morphological Patterns in Vertebrates -- chapter 7 Cellular Control of

Time, Size, and Shape in Development and Evolution -- chapter 8 Cellular Basis of Evolution in Animals: An Evo-Devo Perspective -- chapter 9 Dynamical Patterning Modules Link Genotypes to Morphological Phenotypes in Multicellular Evolution.

Sommario/riassunto

This book is the first in a projected series on Evolutionary Cell Biology, the intent of which is to demonstrate the essential role of cellular mechanisms in transforming the genotype into the phenotype by transforming gene activity into evolutionary change in morphology. This book —Cells in Evolutionary Biology — evaluates the evolution of cells themselves and the role cells have been viewed to play as agents of change at other levels of biological organization. Chapters explore Darwin’s use of cells in his theory of evolution and how Weismann’s theory of the separation of germ plasm from body cells brought cells to center stage in understanding how acquired changes to cells within generations are not passed on to future generations. The study of evolution through the analysis of cell lineages during embryonic development dominated evolutionary cell biology until usurped by the switch to genes as the agents of heredity in the first decades of the 20th century. Discovery that cells exchanged organelles via symbiosis led to a fundamental reevaluation of prokaryotic and eukaryotic cells and to a reorganizations of the Tree of Life. Identification of cellular signaling centers, of mechanisms responsible for cellular patterning, and of cell behavior and cellular condensations as mediating the plasticity that enables phenotypic change during evolution, provided powerful new synergies between cell biology and evolutionary theory and the basis for Evolutionary Cell Biology.