1. Record Nr. UNINA9910678244203321

Titolo	Convergent Evolution : Animal Form and Function / / edited by Vincent L. Bels, Anthony P. Russell
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2023
ISBN	3-031-11441-8
Edizione	[1st ed. 2023.]
Descrizione fisica	1 online resource (594 pages)
Collana	Fascinating Life Sciences, , 2509-6753
Disciplina	576.8 591.38
Soggetti	Evolution (Biology) Zoology Anatomy, Comparative Physiology Ecophysiology Materials Bionics Evolutionary Biology Animal Anatomy Animal Physiology Bioinspired Materials
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	The Concept of Convergent Evolution and Its Relationship to the Understanding of Form and Function -- Odonatopteran Approaches to the Challenges of Flight: Convergence of Responses Subject to a Common Set of Morphological Constraints -- Digging Up Convergence in Fossorial Rodents: Insights into Burrowing Activity and Morpho-Functional Specializations of the Masticatory Apparatus -- Testing for Convergent Evolution in Baleen Whale Cochleae -- The Sacro-Iliac Joint of the Felidae and Canidae and Their Large Ungulate Prey: An Example of Divergence and Convergence -- Aquatic Feeding in Lissamphibia -- Convergence of Aquatic Feeding Modes in the Sauropsida (Crocodiles,

Birds, Lizards, Snakes And, Turtles) -- Convergent Evolution of Secondarily Aquatic Feeding in Mammals -- Solutions to a Sticky Problem: Convergence of the Adhesive Systems of Geckos and Anoles (Reptilia: Squamata) -- Convergent Evolution of Animal Adhesive Pads -- Convergence of Arboreal Locomotor Specialization: Morphological andBehavioral Solutions for Movement on Narrow and Compliant Supports -- Convergent Evolution of Manual and Pedal Grasping Capabilities in Tetrapods -- Convergence in Gliding Animals: Morphology, Behavior, and Mechanics -- Convergence of Bipedal Locomotion: Why Walk or Run on Only Two Legs -- Aquatic Locomotion: Environmental Constraints That Drive Convergent Evolution -- Convergent Evolution of Attachment Mechanisms in Aquatic Animals -- Convergent Evolution: Theory and Practice for Bioinspiration -- Conclusion and Perspectives: What Convergent Evolution of Animal Forms and Functions Says About the Predictability of Evolution.

Sommario/riassunto

This volume presents a series of case studies, at different levels of inclusivity, of how organisms exhibit functional convergence as a key evolutionary mechanism resulting in responses to similar environmental constraints in mechanically similar ways. The contributors to this volume have selected and documented cases of convergent evolution of form and function that are perceived to be driven by environmental abiotic and/or biotic challenges that fall within their areas of expertise. Collectively these chapters explore this phenomenon across a broad phylogenetic spectrum. The sequence of chapters follows the organizational principle of increasing phylogenetic inclusivity, rather than the clustering of chapters by perceived similarity of the phenotypic features or biomechanical challenges being considered. This is done to maintain focus on the evolutionary phenomenon that is the primary subject matter of the book, thereby providing a basis for discussion among the readership aboutwhat is necessary and sufficient to justify the recognition of functional convergence. All chapters stress the need for integrative approaches for the elucidation of both pattern and process as they relate to convergence at various taxonomic levels.