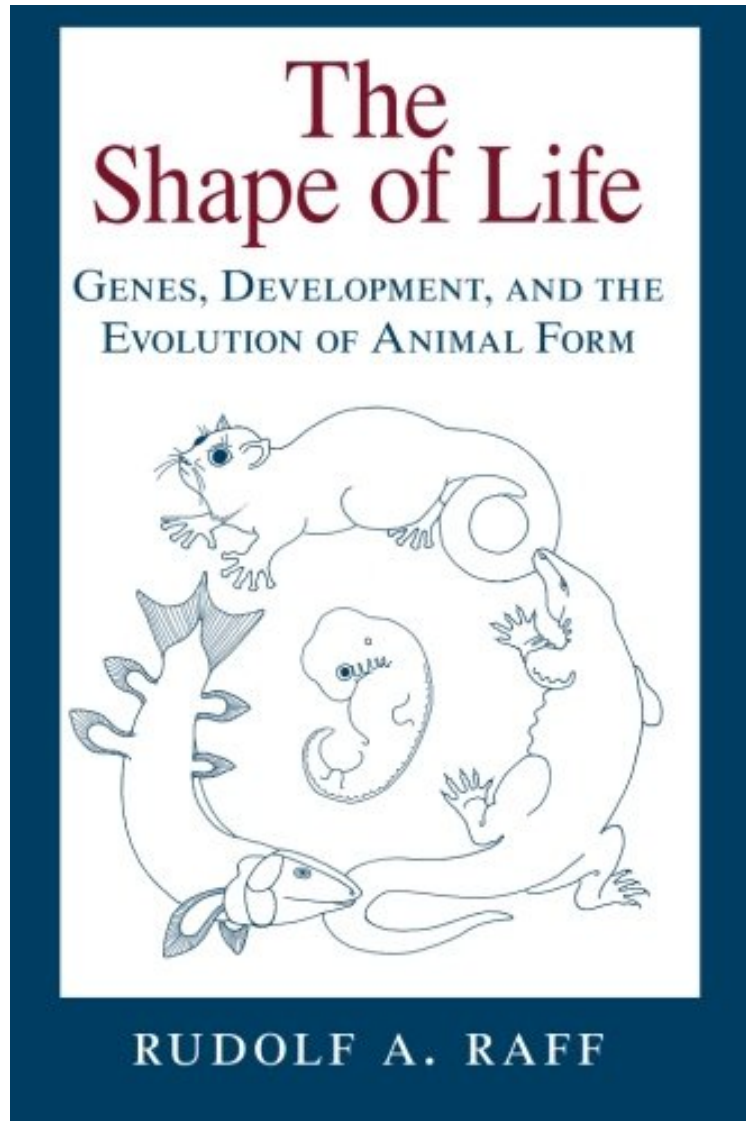


The Shape of Life: Genes, Development, and the Evolution of Animal Form

Rudolf A. Raff

*ebooks / Download PDF / *ePub / DOC / audiobook*



DOWNLOAD



READ ONLINE

#1020932 in Books Rudolf A Raff 1996-06-15 1996-06-15 Original language: English PDF # 1 9.00 x 1.30 x 6.00l, 1.63 #File Name: 0226702669544 pages The Shape of Life Genes Development and the Evolution of Animal Form | File size: 60.Mb

Rudolf A. Raff : The Shape of Life: Genes, Development, and the Evolution of Animal Form before purchasing it in order to gage whether or not it would be worth my time, and all praised The Shape of Life: Genes, Development, and the Evolution of Animal Form:

0 of 1 people found the following review helpful. Three Stars By 99th BG delivered as expected, book is not very

good23 of 24 people found the following review helpful. Strangely Difficult, but Impressive RewardingBy Bill PerezIt took me awhile to get through this book--I probably read it twice by the time I was finished. This was because I found myself rereading nearly every paragraph as I progressed. I still have no clue why it was such hard slogging--while Raff makes little concession to the layman, the material is pretty much similar to what one finds in the "News Reviews" section of a Nature magazine, something I'm pretty familiar with. While he has a slight tendency to be indirect and abstract in his choice of words now and then, it is nothing glaring or overly annoying. Truth is I just don't know why I found it so difficult. But I stuck with it, and there is a good reason: Raff's remarkable detailed command of nearly every aspect of modern biology is nothing short of awesome. And it has to be, for his purpose is to weave disparate, highly technical and entrenched realms of biological study (genetics, cladistics, embryology, paleontology, molecular biology, and evolutionary theory, to name the main strains) into a unified tapestry of understanding. Raff aims at providing a launching pad for such cross-disciplinary synthesis, and I believe he more than succeeds. His initial stabs at theory in this new arena are sound, I believe--he successfully questions the primacy of heterochrony as an explanatory principle of developmental evolution, and forcefully suggests developmental modularity as a deeper source of insight. For instance, Raff identifies the phylotypic Bauplan of organisms with a period of maximum module inter-connectivity in development. He coins the term "developmental hourglass" to convey the concept--both early and late development in embryos have greater developmental flexibility (due to relatively fewer interactions between developmental modules) compared to a constraining mid-developmental "waist" where the phylotype is laid down during organogenesis. Did you just have to read that twice to get it?20 of 22 people found the following review helpful. A Great Introduction to the Synthesis of Development and EvoBy Patrick SpearsWhy have no new phyla emerged since the Ordovician, even after tremendous mass extinctions such as the end Permian, or when life radiated onto land, an entirely new ecological niche? Why have metazoan "body plans" been conserved since the Cambrian, even while vast amounts of morphological change has occurred within the phyla? Do developmental constraints explain this, and if so, what types of constraints? Are the arthropods monophyletic, or not? What are the developmental bases of body-plan structure, how do developmental processes shape morphology? What do new genetic data tell us about phylogenetic relationships between phyla? These are all questions I had formulated before reading this book. Some of these questions now have good answers, and others remain obscure. Raff does a good job summarizing what is known about these and other questions. Its now obvious that knowledge of developmental processes will answer, at least partially, some long standing evolutionary questions. Also recommended is "Genes, Embryos, and Evolution," which covers much of the same territory, but is slight more up to date and includes some excellent color plates. As a lighter read, I would recommend Simon Conway Morris' book "The Crucible of Creation," which covers the early metazoan fossil record, and discusses some very tantalizing evidence for inter-phylum evolution from Ediacaran and early Cambrian fossils.

Rudolf Raff is recognized as a pioneer in evolutionary developmental biology. In their 1983 book, *Embryos, Genes, and Evolution*, Raff and co-author Thomas Kaufman proposed a synthesis of developmental and evolutionary biology. In *The Shape of Life*, Raff analyzes the rise of this new experimental discipline and lays out new research questions, hypotheses, and approaches to guide its development. Raff uses the evolution of animal body plans to exemplify the interplay between developmental mechanisms and evolutionary patterns. Animal body plans emerged half a billion years ago. Evolution within these body plans during this span of time has resulted in the tremendous diversity of living animal forms. Raff argues for an integrated approach to the study of the intertwined roles of development and evolution involving phylogenetic, comparative, and functional biology. This new synthesis will interest not only scientists working in these areas, but also paleontologists, zoologists, morphologists, molecular biologists, and geneticists.