

Contents

	Series Foreword	vii
	Preface	ix
I	INTRODUCTION	1
1	Origination of Organismal Form: The Forgotten Cause in Evolutionary Theory	3
	Gerd B. Müller and Stuart A. Newman	
II	PROBLEMS OF MORPHOLOGICAL EVOLUTION	11
2	The Cambrian “Explosion” of Metazoans	13
	Simon Conway Morris	
3	Convergence and Homoplasy in the Evolution of Organismal Form	33
	Pat Willmer	
4	Homology: The Evolution of Morphological Organization	51
	Gerd B. Müller	
III	RELATIONSHIPS BETWEEN GENES AND FORM	71
5	Only Details Determine	75
	Roy J. Britten	
6	The Reactive Genome	87
	Scott F. Gilbert	
7	Tissue Specificity: Structural Cues Allow Diverse Phenotypes from a Constant Genotype	103
	Mina J. Bissell, I. Saira Mian, Derek Radisky, and Eva Turley	
8	Genes, Cell Behavior, and the Evolution of Form	119
	Ellen Larsen	
IV	PHYSICAL DETERMINANTS OF MORPHOGENESIS	133
9	Cell Adhesive Interactions and Tissue Self-Organization	137
	Malcolm Steinberg	

10	Gradients, Diffusion, and Genes in Pattern Formation	165
	H. Frederik Nijhout	
11	A Biochemical Oscillator Linked to Vertebrate Segmentation	183
	Olivier Pourquié	
12	Organization through Intra-Inter Dynamics	195
	Kunihiko Kaneko	
13	From Physics to Development: The Evolution of Morphogenetic Mechanisms	221
	Stuart A. Newman	
V	ORIGINATION AND EVOLVABILITY	241
14	Phenotypic Plasticity and Evolution by Genetic Assimilation	245
	Vidyanand Nanjundiah	
15	Genetic and Epigenetic Factors in the Origin of the Tetrapod Limb	265
	Günter P. Wagner and Chi-hua Chiu	
16	Epigenesis and Evolution of Brains: From Embryonic Divisions to Functional Systems	287
	Georg F. Striedter	
17	Boundary Constraints for the Emergence of Form	305
	Diego Rasskin-Gutman	
	Contributors	323
	Index	325