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0521017262 - This Side Up: Spatial Determination in the Early Development of Animals

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P.W. BARLOW D. BRAY P.B. GREEN J.M.W. SLACK

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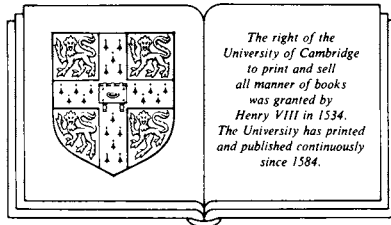
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SPATIAL DETERMINATION IN THE EARLY
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ROBERT WALL



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Contents

Preface	<i>page</i> ix
Acknowledgements	xi
1 Oogenesis	1
The events of oogenesis	1
Visible organisation and its origins	9
The extent of spatial determination in oocytes	18
Conclusions	30
2 From oocyte to zygote	31
The events	31
Ooplasmic segregation	32
(a) Bipolar differentiation	32
(b) <i>Lymnaea</i>	38
(c) Sea urchins	39
(d) Ascidians	41
(e) Amphibians	45
The extent of spatial determination	49
(a) Work with egg fragments	49
(b) Centrifugation	55
(c) Rotations and other interference with amphibian eggs	57
(d) Differentiation without cleavage	64
Conclusions	65
3 Does cleavage cut up a preformed spatial pattern?: the case of spiralian embryos	68
Spiral cleavage patterns	69
Lineage plans and fate maps	71
Mosaic development after separation of blastomeres	75
The role of the D quadrant: the first two cleavages	78
(a) Polar lobes	78
(b) Unequal first cleavages	83
(c) Equal first cleavages	85

vi *Contents*

The role of the D quadrant: later stages	85
(a) Lobe-bearing species	86
(b) Species with unequal first cleavages	89
(c) Species with equal first cleavages	90
The fine-structure and biochemistry of spiralian development	93
Conclusions	95
4 The limits of mosaicism in non-spiralian cleavage	96
Ascidians	96
Amphioxus	107
Ctenophores	109
Hydrozoans	112
Nematodes	113
Insects	119
Sea urchins	127
Starfish	133
Amphibians	133
Mammals	138
Conclusions	142
5 Cellular interactions in the morula and blastula: the case of sea urchin embryos	144
Normal development and fate maps	144
Cell isolations and abnormal combinations	147
Chemical animalisation and vegetalisation	154
Models of determination	156
Approaches to a physiology of determination	158
The biochemistry of the morula and blastula	160
Conclusions	167
6 Interactions at morula and blastula in other embryos	168
Insects	168
Other arthropods and other echinoderms	187
Amphibians	188
Ascidians and Amphioxus	197
Spirally cleaving embryos	199
Hydrozoans	204
Mammals	205
Conclusions	209
7 Interactions between moving cells: the case of amphibian gastrula	211
Morphogenetic movements	211

Cambridge University Press

0521017262 - This Side Up: Spatial Determination in the Early Development of Animals

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Frontmatter

[More information](#)

	<i>Contents</i>	vii
Fate maps through gastrulation		214
Spemann's organiser		215
The development of explants and implants from the early gastrula		219
Changes in spatial properties during gastrulation		221
Inductive effects of simple culture media		226
Heterogenous inductors		228
The competence of the ectoderm		231
The transmission of inductive stimuli		234
Attempts to identify inducer molecules		237
Biochemical events in the gastrula		240
What is determined at the end of gastrulation?		246
Conclusions		251
8 Spatial determination in the gastrulae of other groups		253
Sea urchins		253
Insects		258
Spiralian embryos		261
Ascidians and Amphioxus		262
Some lower vertebrates		263
Hydrozoans		265
A note on the mammals		266
Conclusions		266
9 Determination in embryos showing partial cleavage		267
Cephalopods		267
Teleosts		273
Reptiles		283
Birds		285
(a) Descriptive embryology		285
(b) Causal analysis		290
(c) Biochemical aspects		295
A note on the mammals		299
Conclusions		301
10 Patterns and mechanisms in early spatial determination		304
Patterns		304
Mechanisms		312
References		320
Index		423

Preface

My work for this book really began 20 years ago when I worked for the late Professor C.H. Waddington producing summaries of current research on development. I became particularly interested in the origins of spatial patterns, where I felt that I could detect signs of common features in many different developing systems. Since that time I have tried to make notes on all published studies of early development as they appeared, whatever the animal group concerned. I have also gone back in time to look again at many seminal studies published up to 100 years ago.

In selecting from this huge literature, I have been guided mainly by the principle that the work should have a potential relevance for the spatial determination problem. No doubt I have failed to 'pick the winners' in some cases, but the alternative was to risk losing the thread in a book of unwieldy size. My choices will seem to many to be particularly idiosyncratic in the physiological and biochemical sections, where I have presented some classical data (the meaning of which is still unclear) while omitting some modern studies. I justify this on the basis that the former will one day have to be encompassed in theories of spatial determination, while the latter may prove not to be relevant and have in any case been considered in depth in Davidson's *Gene Activity in Early Development*.

At the present time, the data relevant to the spatial determination problem still derive primarily from experimental embryology, and this is reflected in this book. In several cases I have assessed particular approaches to the problem first by considering data exclusively obtained with a particular much-studied group, and then in a comparative survey of other animal groups. For example, concepts of determination based upon intercellular signalling are considered first for sea urchins, and then extended to other embryos including that of *Drosophila* where we seem at last to be uncovering a molecular basis for developmental phenomena. Molecular data are presented quite fully in such cases (although the survey of literature for this book was completed at the end of August 1987), and the final chapter considers the evidence for common mechanisms as well as common patterns in determination.

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[More information](#)

Acknowledgements

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