

Mouse development comes of age

Mouse Development: Patterning, Morphogenesis and Organogenesis

edited by J. Rossant and P. Tam

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Ten years ago, as a graduate student of developmental biology, I can clearly remember a fruitless search for a textbook that would describe mouse development and unveil some of the mystique of the mammalian system. *Manipulating the Mouse Embryo* (Hogan *et al.*, 1994) was, and still is, a wonderful technical resource, and *The Atlas of Mouse Development* (Kaufman, 1992) provided an exceptional anatomical description of the mouse. However, neither of these volumes afforded more than a cursory introduction to development of the mouse. What was clearly missing was a reference text that covered the intricacies of mammalian development in depth.

Finally, 10 years on, the trilogy is complete. Patrick Tam and Janet Rossant, two of the most respected mouse developmental biologists, have produced an exceptional book. Right from the outset, it highlights the incredible explosion in our knowledge and understanding of mammalian development over the past decade and the enormous contribution that has come from studies using mice. As the title suggests, *Mouse Development, Patterning, Morphogenesis and Organogenesis* is organized into three primary sections. Beginning with the establishment of body patterns, we are introduced to the mouse embryo from fertilization through gastrulation, with particular emphasis on segmentation and the generation of asymmetry along the three major axes of the body. The book then takes us on a journey through lineage specification and differentiation, covering such topics as germ and stem cell specification along with muscle, skeletal, vascular and hematopoietic development. The book concludes with a number of chapters devoted to organogenesis, covering sex determination, and development of the heart, internal organ and sensory organs. There are numerous well written chapters in the book. Particularly notable are those covering endodermal, craniofacial and heart development for their exceptionally broad

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coverage of very complex fields. Many of the chapters describe the extraordinary number of gene knockout and mutation analyses that have been performed in mice, along with their phenotypic relevance to human development. This serves to remind us, and also to highlight, some of the most significant advantages of the mouse as an experimental model system. *Mouse Development* captures in depth the essence and intricacies of mouse embryogenesis and will be an essential reference text for any serious developmental biologist.

However, there are some obvious omissions from the book, in particular, chapters covering limb development, imprinting and X-inactivation. I would also have preferred to see distinct chapters on spinal cord and central nervous system differentiation, given the volume of research and understanding in this area that has emerged during the past few years based primarily on studies conducted in mice. One could argue that chapters covering these topics can be found elsewhere in *Principles of Neural Science* (Kandel *et al.*, 2000). However, inclusion in a future revised edition will surely make this book a truly complete reference text. It is unfortunate that a text of

this quality contains many substandard figures. The poor-quality figures look like they were produced from scanned images of old slides and in some cases the associated text is almost unreadable. It would have required some effort to replace the text, but it would have been well worth it.

Overall, however, this detracts little from the high quality and significance of this fine book, which currently has no peer. *Mouse Development, Patterning Morphogenesis and Organogenesis* will sit very comfortably upon any bookshelf complemented with *Manipulating the Mouse Embryo* (Hogan *et al.*, 1994), *Guide to Techniques in Mouse Development* (Wassarman and DePamphilis, 1993) and *The Atlas of Mouse Development* (Kaufman, 1992). □

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