
Preface

Development of the vascular system involves a complex sequence of inductive and differentiating signals leading to vasculogenesis and/or angiogenesis. Dissecting and exploring this process in its multifaceted morphological and molecular aspects has represented a basic contribution and a fascinating adventure in the history of biology.

Several genetic and epigenetic mechanisms are involved in the early development of the vascular system, and there is an extensive literature on the genetic background and the molecular mechanisms responsible for blood vessel formation. Evidence is now emerging that blood vessels themselves have the ability to provide instructive regulatory signals to surrounding nonvascular target cells during organ development. Thus, endothelial cell signaling is currently believed to promote fundamental cues for cell fate specification, embryo patterning, organ differentiation, and postnatal tissue remodeling. Understanding the concept of vascular bed specificity represents a major challenge for future investigations. Indeed, one of the most interesting theoretical perspectives and practical applications of endothelial cell signaling is the possibility for these cells to maintain their inductive potential during adult life.

The aim of this book is to provide a range of methods and protocols for studying vascular morphogenesis in vivo and in vitro to reflect advances in the field. I hope that this book attracts a wide audience amongst cell biologists, anatomists, pathologists, and physiologists, and that the reader finds this book instructive and useful.

I would also like to thank the colleagues and friends who kindly agreed to contribute to this book.

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