
Preface

The last decade has seen an explosion in our knowledge concerning the cellular and molecular mechanisms involved in the control of male reproduction. This volume brings the reader up to date with some of the major advances in these fields. The chapters have been written by acknowledged leaders in the field and provide the reader with the key elements in each of the areas, thereby providing a sound base for a further acquisition of knowledge by those who seek more detailed information. The volume covers the developments in the control of testis determination and the subsequent cell biology of testicular development. The process of spermatogenesis is dealt with from several angles, providing the reader with a basic understanding of the hormonal control of spermatogenesis and our rapidly expanding knowledge of the role of growth factors and proto-oncogenes in the control of this process. Although the details of all aspects of the cell biology of spermiogenesis are beyond the scope of this volume, the description of the factors controlling nuclear morphogenesis during spermiogenesis gives the reader an indication of the complexity of the process.

No modern description of testicular function would be complete without a discussion of our emerging knowledge of the paracrine interrelationships between the components of the testis. In particular, the function of the Sertoli cells and the potential control of their function by germ cells is a subject of one of the chapters of this volume. An expansion of one of these areas can be found in the chapter concerning the control of iron transport in the testis. Details of the mechanisms by which molecular signaling occurs in spermatozoa demonstrate the evolution of parallel systems through a range of species.

The dependence of spermatogenesis on testosterone secretion by the testis makes it necessary for any volume on testicular function to consider the molecular biology of the control of testosterone secretion. A chapter on this and one on the control systems in Leydig cells, particularly as they evolve during development, complete a picture of the hormonal control of spermatogenic function. No organ can function without an adequate vascular supply, and the chapter concerning the control of the vasculature within the testis and its intriguing and novel features rounds off the volume.