
Preface

Spermatogenesis is a biologically complex and essential process. During spermatogenesis, spermatogonia undergo meiotic recombination, reduction of the genome to a haploid state, and extensive cellular modifications that result in a motile cell capable of traversing the female reproductive tract and withstanding various potential assaults to viability. Further, the sperm must be capable of recognizing and binding to the oocyte, undergoing exocytosis of the acrosomal contents, penetrating the oolemma of the oocyte, and then undergoing profound nuclear reorganization events essential for normal syngamy and embryogenesis. Defects in any of these steps, or the many other biological processes needed for successful fertilization, can lead to male infertility, a disease that affects approximately 5–7 % of the population.

Deficiencies in sperm function are usually the result of spermatogenic defects. This edition of *Methods in Molecular Biology* details protocols used in the study of spermatogenesis and includes basic research tools as well as clinical analytical protocols. We have attempted to provide a comprehensive summary of protocols used in clinical andrology laboratories, as well as common protocols used in the study of spermatogenesis in both the human and animal models. Such protocols include basic techniques, such as obtaining accurate results for a sperm count, and advanced procedures, such as genome-wide genetic study tools and evaluation of nuclear proteins. This volume is unique in its breadth and should be a useful reference for clinicians and researchers alike.

We are very grateful to the chapter authors who have contributed to this book. The authors are leaders in the field, and we appreciate their collegial willingness to assist in the dissemination of good protocols. Accurate, clear protocols are an essential ingredient to both accurate clinical testing and to the advancement of research. It is our hope that this volume will facilitate progress in both of these realms.

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Spermatogenesis

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