Contents

List of contributors x
Foreword by Roger G. Gosden xv
Foreword by Edward E. Wallach xvi
Preface xvii
Acknowledgements xviii

Section 1: Introduction
1 The evolution of ART 1
   Peter R. Brinsden
2 The effect of chemotherapy and radiotherapy on the human reproductive system 11
   W. H. B. Wallace, R. A. Anderson and D. Meirow
3 Fertility preservation in non-cancer patients 23
   Javier Domingo, Ana Cobo, María Sánchez and Antonio Pellicer

Section 2: Cancer biology, epidemiology and treatment
4 Basic cancer biology and immunology 35
   Roy A. Jensen, Lisa M. Harlan-Williams, Wenjia Wang and Shane R. Stecklein
5 Breast cancer and fertility preservation: a view from oncology 49
   Carol Fabian and Jennifer Kl Kemp
6 Breast cancer therapy and reproduction 62
   Larissa A. Korde and Julie R. Gralow
7 Pediatric cancer therapy and fertility 73
   Pinki K. Prasad, Jill Simmons and Debra Friedman
8 Cancer epidemiology and environmental factors in children, adolescents and young adults 83
   Karina Braga Ribeiro and Paolo Boffetta

Section 3: Reproductive biology and cryobiology
9 Life and death in the germ line: apoptosis and the origins of DNA damage in human spermatozoa 101
   R. J. Aitken and B. J. Curry
10 Molecular aspects of follicular development 114
    Zhongwei Huang and Dagan Wells
11 Fundamental cryobiology of reproductive cells and tissues: concepts and misconceptions 129
    Erik Woods, Sreedhar Thirumala, Xu Han and John K. Critser
12 Fundamental aspects of vitrification as a method of reproductive cell, tissue and organ cryopreservation 145
    Steven F. Mullen and Gregory M. Fahy

Section 4: Fertility preservation strategies in the male
13 Hormonal suppression for fertility preservation in the male 164
    Gunapala Shetty
14 Cryopreservation of spermatozoa: old routine and new perspectives 176
    E. Isachenko, V. Isachenko, R. Sanchez, I. I. Katkov and R. Kreienberg
List of contents

Section 5: Fertility preservation strategies in the female: medical/surgical

15 Transplantation of cryopreserved spermatogonia 199
   Jill P. Ginsberg and Ralph L. Brinster

16 Cryopreservation and transplantation of testicular tissue 209
   Christine Wyns

17 Assisted reproductive techniques and donor sperm in cancer patients 225
   Wayland Hsiao, Elizabeth Grill and Peter N. Schlegel

Section 6: Fertility preservation strategies in the female: ART

18 Use of GnRH agonists for prevention of chemotherapy-induced gonadotoxicity 239
   Susannah C. Copland and Megan Clowse

19 Ovarian transposition 250
   Carrie A. Smith, Erin Rohde and Giuseppe Del Priore

20 Fertility-saving surgery for cervical cancer 257
   P. Mathevet and A. Ciobanu

21 Results of conservative management of ovarian malignant tumors 266
   Philippe Morice, Catherine Uzan and Sebastien Gouy

Section 7: Ovarian cryopreservation and transplantation

22 Embryo cryopreservation as a fertility preservation strategy 279
   Pedro N. Barri, Anna Veiga, Montserrat Boada and Miquel Solé

23 Oocyte cryopreservation: slow freezing 283
   Andrea Borini and Veronica Bianchi

24 Cryopreservation of human oocytes and the evolution of vitrification technology for this purpose 293
   Michael J. Tucker and Juergen Liebermann

25 Cryopreservation and transplantation of isolated follicles 305
   Marie-Madeleine Dolmans and Anne Van Langendonck

26 ART and oocyte donation in cancer survivors 310
   Ina N. Cholst, Glenn L. Schattman and Zev Rosenwaks

Section 8: In vitro follicle growth and maturation

27 General overview of ovarian cryobanking 328
   S. Samuel Kim

28 Ovarian tissue cryopreservation 342
   Debra A. Gook and David H. Edgar

29 Ovarian tissue transplantation 357
   Jacques Donnez, Jean Squifflet and Marie-Madeleine Dolmans

30 Whole ovary freezing 367
   J. Ryan Martin, Jason G. Bromer and Pasquale Patrizio

31 Ovarian transplantation: whole ovary transplantation 377
   Mohamed A. Bedaiwy and Tommaso Falcone

32 Molecular and cellular integrity of cultured follicles 389
   David F. Albertini, Gokhan Akkoyunlu and S. Samuel Kim

33 In vitro growth systems for human oocytes: from primordial to maturation 397
   Evelyn E. Telfer and Marie McLaughlin
List of contents

34 Contributions of ovarian stromal cells to follicle culture 409
David J. Tagler, Lonnie D. Shea and Teresa K. Woodruff

35 In vitro maturation of GV oocytes 421
M. De Vos and J. Smitz

36 Clinical potential of in vitro maturation 431
Baris Ata, Einaat Shalom-Paz, Srinivasan Krishnamurthy, Ri-Cheng Chian and Seang Lin Tan

Section 9: Future technologies

37 From pluripotent stem cells to germ cells 440
Rosita Bergström and Outi Hovatta

38 Artificial ovary 448
Christiani A. Amorim

39 Predicting ovarian futures: the contribution of genetics 459
Elizabeth A. McGee and Jerome F. Strauss, III

Section 10: Ethical, legal and religious issues with fertility preservation

40 Psychological issues of cancer survivors 467
Allison B. Rosen, Kenny A. Rodriguez-Wallberg and Kutluk Oktay

41 Fertility preservation: ethical considerations 479
Pasquale Patrizio and A. L. Caplan

42 Legal aspects of fertility preservation 488
Nanette R. Elster

43 Christian ethics in fertility preservation 497
Brent Waters

Index 507

The color plate section will be found between pages 366 and 367.