

Contents

List of Contributors x
Foreword by Peter N Schlegel xv
Foreword by Roger G Gosden xvii
Preface xix

Section 1: Introduction

- 1 **The Evolution of the Assisted Reproduction Technologies** 1
Peter R Brinsden
- 2 **The Effect of Chemotherapy on the Human Reproductive System** 11
Hadassa Roness and Dror Meiorow
- 3 **The Effect of Radiotherapy on the Human Reproductive System** 18
Tom W Kelsey, Chia-Ho Hua, and W Hamish B Wallace
- 4 **The Need for Fertility Preservation in Cancer Patients** 25
Richard A Anderson and Rod T Mitchell

Section 2: Reproductive Biology and Cryobiology

- 5 **Life and Death in the Germ Line: Apoptosis and the Origins of DNA Damage in Human Spermatozoa** 35
R John Aitken and Benjamin J Curry
- 6 **Principles of Vitrification as a Method of Cryopreservation in Reproductive Biology and Medicine** 49
Gregory M Fahy

Section 3: Fertility Preservation in Cancer and Non-Cancer Patients

- 7 **Fertility Preservation in Non-Cancer Patients** 67
Javier Domingo, Ana Cobo, and Antonio Pellicer

- 8 **Fertility Preservation in Women with Ovarian Endometriomas: From Surgery to Oocyte and Ovarian Tissue Freezing** 79
Jacques Donnez, Javier García-Solares, and Marie-Madeleine Dolmans
- 9 **Pediatric Cancer Therapy and Fertility** 90
Claire Carlson and Jill P Ginsberg
- 10 **Breast Cancer Therapy and Fertility** 106
Kenny A Rodriguez-Wallberg
- 11 **Fertility Preservation in Young Adults with Gastrointestinal and Hematological Malignancies** 116
Ozgur Oktem

Section 4: Fertility Preservation Strategies in the Male

- 12 **Transplantation of Cryopreserved Spermatogonia** 127
Jill P Ginsberg and Ralph L Brinster
- 13 **Cryopreservation and Grafting of Immature Testicular Tissue** 138
Mina Mincheva and Stefan Schlatt
- 14 **Use of Cryopreserved Sperm and ART after Chemotherapy or Radiotherapy** 153
Ryan Flannigan, Elizabeth Grill, and Peter N Schlegel

Contents

**Section 5: Fertility Preservation
 Strategies in the Female:
 Medical/Surgical**

- 15 **Use of GnRH Analogs for Prevention of
 Chemotherapy-Induced
 Gonadotoxicity** 171
 Matteo Lambertini, Florence Horicks,
 and Isabelle Demeestere
- 16 **Ovarian Transposition before
 Radiotherapy** 182
 Yaron Gill and Togas Tulandi
- 17 **Fertility-Saving Surgery for Gynecological
 Cancers** 187
 Olivier Donnez, Jean-Claude Darmon,
 Jérémie De Troyer, and Nicolas
 Sterkers
- 18 **Results of Conservative Management of
 Ovarian Malignant Tumors** 197
 Catherine Uzan, Nathalie Chabbert-
 Buffet, Blandine Courbiere, Sebastien
 Gouy, and Philippe Morice

**Section 6: Fertility Preservation
 Strategies in the Female: ART**

- 19 **Embryo Cryopreservation as a Fertility
 Preservation Strategy** 211
 Pedro N Barri, Anna Veiga,
 Montserrat Boada, and Miquel Solé
- 20 **Vitrification of Human Oocytes as
 a Fertility Preservation Strategy** 215
 Ana Cobo, Aila Coello, and Antonio
 Pellicer
- 21 **ART and Oocyte Donation in Cancer
 Survivors** 225
 Glenn L Schattman, Ina N Cholst, and
 Zev Rosenwaks

**Section 7: Ovarian Cryopreservation
 and Transplantation**

- 22 **Ovarian Cryopreservation and
 Transplantation: Overview** 243
 S Samuel Kim and Jung Ryeol Lee

- 23 **Autotransplantation of Cryopreserved
 Ovarian Tissue: Techniques and
 Results** 260

Jacques Donnez, Diego D
 Manavella, and Marie-Madeleine
 Dolmans

- 24 **Cryopreservation of Ovarian Tissue by
 Vitrification: Techniques and
 Results** 273

Yodo Sugishita, Tai Kawahara, Seido
 Takae, Yuki Horage, Suguru Igarashi,
 and Nao Suzuki

- 25 **Ovarian Tissue Cryopreservation** 281

Debra A Gook and David H Edgar

- 26 **Risk of Transplanting Malignant
 Cells in Cryopreserved Ovarian
 Tissue** 302

Marie-Madeleine Dolmans and
 Rossella Masciangelo

- 27 **Whole Ovary Freezing** 313

Pasquale Patrizio and Tommaso
 Falcone

**Section 8: In Vitro Follicle
 Culture**

- 28 **Molecular and Cellular Integrity of
 Cultured Follicles** 323

David F Albertini, Gokhan
 Akkoyunlu, and S Samuel
 Kim

- 29 **In Vitro Growth of Human
 Oocytes** 332

Evelyn E Telfer

- 30 **Contributions of Ovarian Stromal Cells to
 Follicle Culture** 341

Emma S Gargus and Teresa
 K Woodruff

- 31 **In Vitro Maturation of Germinal Vesicle
 Oocytes** 355

Michel De Vos

- 32 **Survival of Primordial Follicles: Tips and
 Tricks** 364

Christiani A Amorim and Carolina
 M Lucci

Section 9: New Research and Technologies

- 33 **The Artificial Ovary** 381
Maria Costanza Chiti and Christiani A Amorim
- 34 **Uterus Transplantation: Clinical Practice** 394
Mats Brännström, Jana EJ Pittman, and Pernilla Dahm-Kähler
- 35 **Ovarian Allotransplantation** 404
Michael Feichtinger and S Samuel Kim
- 36 **Allotransplantation of Human Ovarian Tissue** 410
Jacques Donnez, Diego D Manavella, and Marie-Madeleine Dolmans
- 37 **Predicting Ovarian Futures: The Contribution of Genetics** 420
Elizabeth McGee and Jerome F Strauss III

Section 10: Ethical, Legal, and Religious Issues

- 38 **Fertility Preservation: Ethical Considerations** 433
Pasquale Patrizio and Arthur L Caplan
- 39 **Legal Issues of Fertility Preservation** 442
Nanette R Elster
- 40 **Christian Ethics in Fertility Preservation** 452
Brent Waters

Index 462