

## Contents

List of Contributors	<i>xi</i>
About the Editor	<i>xv</i>
Preface	<i>xvii</i>
Acknowledgements	<i>xix</i>
About the Companion Website	<i>xxi</i>

### Section One Reproductive Science: Fundamentals of Human Reproductive Biology 1

- 1 Sexual Differentiation, Gonadal Development, and Development of the External Genitalia: A Review of The Regulation of Sexual Differentiation 3**  
*Rebecca M. Perrett*
- 2 Male and Female Reproductive Anatomy 35**  
*Sara Sulaiman and James Coey*
- 3 Fundamentals of Reproductive Endocrinology 45**  
*Derrick Ebot, Haider Hilal, Michael Carroll, and James Coey*
- 4 The Ovaries, Oocytes, and Folliculogenesis 57**  
*Jacques Gilloteaux and James Coey*
- 5 The Human Spermatozoa 65**  
*Allan Pacey and Katrina Williams*
- 6 The Biology of Fertilization 75**  
*Michael Carroll*
- 7 Human Embryo Development: From Zygote Stage to Peri-Implantation Blastocyst 93**  
*Stéphane Berneau and Michael Carroll*
- 8 The Female Reproductive Tract and Early Embryo Development: A Question of Supply and Demand 99**  
*Henry J. Leese and Daniel R. Brison*

**Section Two Clinical Reproductive Science: Causes of Male and Female Infertility 109**

**9 Disorders of Male Reproductive Endocrinology 111**

*Michael Carroll*

**10 Disorders of Female Reproductive Endocrinology 125**

*Mahshid Nickkho-Amiry and Cheryl T. Fitzgerald*

**11 Oocyte Aneuploidy and the Maternal Age Effect 133**

*Mary Herbert*

**12 Female Reproductive Pathology: Peritoneal, Uterine, and Fallopian Tube Pathologies 147**

*Kenneth Ma Kin Yue, Rosa Trigas, and Edmond Edi-Osagie*

**13 Pathologies of the Male Reproductive Tract 159**

*Aarush Sajjad, Muhammad A. Akhtar, and Yasmin Sajjad*

**14 The Impact of Infections on Reproduction and Fertility 177**

*Val Edwards Jones*

**15 Nutrition, Fetal Health, and Pregnancy 189**

*Emma Derbyshire*

**16 The Embryonic Environment and Developmental Origins of Health 195**

*Tom P. Fleming and Congshan Sun*

**17 Lifestyle and Environmental Impacts on Fertility 205**

*Ana-Maria Tomova and Michael Carroll*

**Section Three Clinical Reproductive Science In Practice: IVF and Assisted Reproductive Technologies 215**

**18 Assessing the Infertile Couple 217**

*Narmada Katakam, Ruth Arnesen, Caroline Watkins, Bert Stewart, and Luciano G. Nardo*

**19 Ovarian Stimulation Protocols 231**

*Nikolaos Tsampras and Cheryl T. Fitzgerald*

**20 Oocyte Retrieval Techniques and Culture of Oocytes 241**

*Dawn Yell*

**21 Sperm Preparation: Strategy and Methodology 251**

*Stephen Harbottle*

**22 Diagnostic Semen Analysis: Uncertainty, Clinical Value, and Recent Advances 265**

*Mathew Tomlinson*

- 23 Surgical Sperm Retrieval 279**  
*Muhammad A. Akhtar, Elizabeth Hester, Solmaz Gul Sajjad, and Yasmin Sajjad*
- 24 In Vitro Fertilization and Intracytoplasmic Sperm Injection 291**  
*Bryan Woodward*
- 25 Morphological Assessment of Embryos in Culture 303**  
*J. Diane Critchlow*
- 26 In Vitro Culture of Gametes and Embryos – The Culture Medium 317**  
*Robbie Kerr*
- 27 Incubators in the Assisted Reproductive Technology Laboratory 333**  
*Louise Hyslop*
- 28 Embryo Transfer Techniques and Improving Embryo Implantation Rates 341**  
*Rachel Cutting*
- 29 Cryopreservation of Gametes and Embryos 351**  
*Tope Adeniyi*
- 30 Preimplantation Genetic Diagnosis and Screening 371**  
*Colleen Lynch and Brendan Ball*
- 31 Long-Term Follow-Up of Children Conceived Through In Vitro Fertilization 385**  
*Omar Abdel-Mannan and Alastair G. Sutcliffe*
- Index 393**

