In July 2013, Louise Brown, the first IVF baby, celebrated her 35th birthday. During her lifetime more than five million IVF babies have been born worldwide. In the past three-and-a-half decades we have witnessed a virtual explosion in the clinical application of assisted reproductive technologies, or ART, to help couples experiencing fertility barriers achieve pregnancy. It is estimated that one in six couples worldwide will experience some sort of fertility barrier during their reproductive lifetime. Today more than one percent of all babies born in the United States are conceived by ART practised in more than five hundred fertility clinics around the country.

Optimization of ART, perhaps more than any other clinical discipline, has relied enormously on scientific breakthroughs and methodological innovations in both the embryology laboratory and the clinical arena. Robert Edwards’ steadfast adherence to stringent scientific principles, principles that made the clinical application of IVF a reality, continues to propel the field.

This volume is intended for all practitioners of reproductive medicine and ART, as well as for reproductive biologists and embryologists, cell and molecular biologists, and others in the biomedical sciences. Its goal is to present in a straightforward manner best practice approaches for overcoming a host of fertility challenges.

Methods in Human Fertility is grounded in the belief that good medical practice of ART relies on a thorough understanding of the physiologic and genetic basis of male and female reproduction. Accordingly, chapters on the scientific fundamentals of human reproduction (Chaps. 1 and 8), genetics of male and female infertility (Chaps. 2–4), spermatozoal function (Chap. 5), markers of male infertility (Chap. 9), and menstrual cycle physiology (Chap. 7) are followed by detailed presentations of clinical aspects of ART (Chaps. 10, 12–15). Descriptions of oocyte and sperm retrieval techniques (Chaps. 16 and 17) are complemented by a thorough presentation of contemporary approaches for diagnosing and treating male infertility (Chap. 18). Ovarian tissue cryopreservation (Chap. 21) along with traditional and novel approaches to oocyte and embryo cryopreservation (Chaps. 11, 19, and 20) and markers of embryo quality (Chaps. 23 and 24) are described. The dynamic technology known as preimplantation genetic diagnosis or PGD is reviewed (Chap. 22), as is the long-term well-being of children conceived following intracytoplasmic sperm injection, or ICSI (Chap. 26). Finally, embryo transfer techniques and technology involved in human embryonic stem cell derivation are also described in some detail (Chaps. 6, 25, and 27).

We wish to express our gratitude to the many authors included in the volume for their diligence and patience and for generously sharing their knowledge and expertise. We are also very grateful to Daniel Pepper who provided considerable editorial expertise and kept the project pretty much on track.

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