

Preface

There have been many advances in our understanding of the reproductive processes in humans since the seventh edition. Much of this progress has been due to the continuing application to reproductive studies of the expanding range and sensitivity of the techniques of molecular biology, which now allow much more sophisticated descriptions and manipulations of reproductive activities. Advances have also come from the development of live imaging techniques of greater utility. These include imaging of reproductive organs and also of brain function *in situ*, as well as less-invasive long-term imaging of the behaviours of cells and embryos in culture. The advances in medical research on reproduction have been truly spectacular – which, in many parts of this edition, renders potentially dangerous extrapolations from other mammals to humans less necessary.

Major health and social issues continue to place reproduction at the centre of scientific, clinical, political and ethical discourse. The threat posed by the continuing growth in world population to the planet's resources and to our fragile climate continues to present a major challenge. The tragic and unnecessary high maternal mortality rates throughout much of the world are an indictment of our best efforts and intentions to 'do better' – as expressed in the WHO Millennium Aims. On the positive side, progress has been made in managing the effects of infection with human immunodeficiency virus through the cheaper provision of generic drugs as well as in the prevention of infection through the provision of Pre-Exposure Prophylaxis (PrEP) medications. However, it is as yet unclear that transmission rates are coming down, a testament to the importance of understanding sexual behaviours and addressing the impact of gender inequalities. These issues are made more pressing by the increasing resistance of microbes to antibiotics in general and to genitourinary infections in particular, with their implications for individual fecundity. Continuing clinical developments in the field of assisted conception have expanded opportunities for the alleviation or circumvention of sub-fertility, genetic disability and, through stem cells, degenerative disease, but have also ignited new (and old) controversies. Thus, the first birth has been reported of a child born after mitochondrial transfer, the development of a human embryo *in vitro* though to 13 days has been reported, and the first licences have been issued for research on the genetic modification of zygotes. The continued explosion of obesity and the realization that both child and adult health and well-being are affected enduringly by life *in utero* have focused work on pregnancy, the placenta and the neonatal period of care. Finally, we are at last beginning to understand more fully how genetic expression during development interacts with environmental factors to influence complex behavioural phenotypes that include psychiatric disease and antisocial behaviour.

It is clear from all these examples that reproduction reaches into all parts of our lives! Science thus forms just part of this book – albeit at its core. One might have hoped that the advances in scientific knowledge and understanding would helpfully inform prevailing socio-legal discussions, attitudes and values. Sadly, since the last edition, for much of the world, the enlightenment viewpoint based on a cool appraisal of expert evidence has been crushed in a miasma of anti-science rhetoric and antagonism to the expertise underlying it: whether directed against climate change, evolution, embryo research, women's progress, or rights for sexual minorities. It is the duty of all scientists to engage in the public and political debates about these issues, so as to ensure that the evidence is presented accurately and reliably to the public, and, where appropriate, to defend their work against such unenlightened views. This course of action is one that the dedicatee of this book, Professor Sir Bob Edwards, was a pioneer of in promoting public discussion of science – indeed, long before it was fashionable to explain your work to the public, he was criticized roundly by his scientific and medical colleagues for doing just that. Indeed, when belatedly he was awarded the Nobel Prize, he was recognized not just for his unique role in the development of research on human reproduction, but also for the wider role Bob played in reproductive science, medicine and ethics, together with his pioneering role in communicating science to the public. Sadly, since the seventh edition, both Bob and his wife and long-term scientific collaborator, Ruth, have died – a loss for me of my intellectual parents.

Finally, for this edition, the book, having been totally restructured in the previous edition, has been updated in all chapters, whilst hopefully retaining the strong narrative thread to the text. To aid this, more detailed information on deeper, comparative or applied aspects of some topics has been transferred to boxes, tables and figures. In addition, we have added a clinical vignette at the end of each chapter.

The major novel changes to which I draw your attention include the elucidation of the role of Vitamin A in the control of the spermatogenic cycle and wave (Chapter 7), more information about fetal hypoxia and immune reactivity during pregnancy (Chapter 16), and the discovery of more elements in the control of parturition in the primate and human (Chapter 18).

As before, many helpful comments, corrections and letters of advice have been received from readers, students and teachers all over the world. As always, in this eighth edition, now in its 38th year, I have tried to provide for students of reproduction a compact and comprehensive text that carves through the micro-detail of the subject to bring out its theoretical cores, but illustrates it with experiment, information and context.



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