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Preface

Infertility is an increasing problem in many societies. The success rate of assisted reproduction is still below 30%, although the treatments and techniques advance and improve continuously. One aspect of fertility and infertility may have been underestimated in the past: the immunology of gametes and the early embryo.

This book provides a wide overview of the current research in this field. Prominent and leading international groups contributed reviews of the most significant findings regarding this topic.

Sperm is a potential target for autoimmunity in men and alloimmunity in women, but physiologically, such immunoreactions do not occur. The preimplantation embryo is semiallogeneic to the mother, but again no destructive reaction occurs. Furthermore, the mother does not only develop a simple immunotolerance, but her uterus prepares a unique, exactly balanced immunological environment around the implantation site, which is indispensable for successful early pregnancy. The regulation of embryo implantation and trophoblast invasion through cytokines, growth factors and other pregnancy-related immunoregulatory molecules are described in detail. Autoimmunity and allergy are examples presented as causes of disequilibrium.

This volume presents the most recent knowledge about physiological and pathological immune reactions which favor or disturb fertility. It is an introduction for those readers who are not yet familiar with this field of immunology and updates the knowledge of specialists.

The general political and public interest in the field is reflected by the establishment and support of a European Network of Excellence entitled EMBIC (Embryo Implantation Control; www.embic.org; 2004–2008), which is strongly supported by the European Union. Several of the authors of this book are partners of the EMBIC.

Udo R. Markert