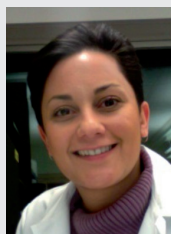


Reproductive immunology: the clinical view

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The field of reproductive immunology began more than 50 years ago when Medawar proposed the paradigm of why the fetus, as a semi-allograft, is not rejected by the maternal immune system. It has since evolved to encapsulate a variety of questions, addressing not only the interaction between the maternal immune system and the fetal–placental unit, but also the development of the fetal immune system, the function of the cycling non-pregnant female reproductive tract, male reproduction, sexually transmitted disease, infertility and complications of pregnancy. In this special focus issue, we have brought together articles from investigators in the field who present both updates to old questions and new areas of reproductive immunology, with a clinical view. Indeed, one of the next challenges for the field is to translate its discoveries to the clinic. This issue hopes to set the scene for how reproductive immunology can move from the bench to the bedside.

For many years it has been appreciated that autoimmune diseases and the state of pregnancy can influence each other, and research has recently gained momentum, giving us a better understanding of some of the underlying mechanisms for this cross-talk. In this issue we have three reviews on the subject. Varghese *et al.* discuss the role of Tregs in both systemic lupus erythematosus (SLE) and in pregnancy [1]. They propose that Treg dysfunction in lupus might predispose these patients to pregnancy complications and discuss their potential role in the obstetric management of SLE patients. Complementing this article is one by Xia and Kellems, who discuss the impact that pathogenic autoantibodies

can have on the cardiovascular system and hypertension, and review the potential role of angiotensin receptor-activating autoantibodies in the pathogenesis of pre-eclampsia [2]. Gaberšček and Zaletel continue on this theme by discussing thyroid autoimmunity and its regulation during pregnancy and after delivery [3].

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We present five articles focused on specific immunological cells and factors in the context of reproduction. Haidl *et al.* discuss the role of mast cells in male infertility [4], Tagliani and Erlebacher contemplate the role of dendritic cells at the maternal–fetal interface [5], Saito *et al.* discuss IL-17-producing Th17 cells and how they participate in both successful and unsuccessful pregnancy processes [6]; and Markert *et al.* talk about IL-6 family members in the context of placental–endometrial interactions and pregnancy complications [7]. Last, Riley presents a commentary on the immunological capabilities of murine trophoblast stem cells [8]. While these articles approach their topics from a basic biological view, they each present a new direction for the field by suggesting how these important findings might help to define clinical interventions through the discovery of novel biomarkers and therapeutic targets for reproductive issues.

This issue also includes articles that approach different aspects of reproductive immunology from a clinical view.

Herington *et al.* review the role of inflammation and alterations within the immune system in the development and progression of endometriosis [9]. Rinaldi *et al.* highlight the importance of anti-inflammatory factors in regulating parturition, and discuss the use of anti-inflammatory mediators as potential novel therapeutic agents in the treatment of inflammation-induced preterm labor [10]. Hodyl *et al.* present a review on an emerging area of reproductive immunology; how the *in utero* environment moulds the developing fetal immune system. They propose that an infectious/inflammatory *in utero* environment may provide the origin of neonatal and childhood inflammatory disease [11]. Continuing on this theme, Kim and Niewiesk comment on how maternal antibodies transferred to the neonate can impact vaccination success [12].

Finally, in this special issue we include a meeting report by Joukhadar *et al.* on the 31st Annual Meeting of The American Society for Reproductive Immunology (ASRI): 'New frontiers in

reproductive immunology research: bringing bedside problems to the bench' [13]. The annual meeting for the ASRI brings basic and clinical scientists together to discuss the current reproductive immunology research with a view to improving both male and female reproductive health.

The editors hope that this issue will prove to be a valuable tool for researchers and clinicians interested in this ever-developing field.

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