

## INAUGURAL EDITORIAL

# Placenta and Reproductive Medicine: Covering research on perinatal health

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The placenta, as the tree of life, is an organ of utmost importance, supporting fetal development by secreting hormones, cytokines, and other compounds and by mediating nutrient and waste exchange. Normal development and function of early placentation allows the maternal defense system to recognize and tolerate the semi-allogeneic fetus that carries paternal antigens and to allow for the normal invasion of trophoblasts. Dysfunctional maternal-fetal crosstalk and deficient placentation are significantly linked to pregnancy loss and pregnancy complications, such as miscarriage,<sup>[1]</sup> intrauterine growth restriction or stillbirth,<sup>[2]</sup> and pre-eclampsia.<sup>[3]</sup>

The placenta influences not just the health of a woman and her fetus during pregnancy, but also the lifelong health of both mother and child. Many chronic diseases in adulthood are of placental origins.<sup>[4]</sup> With attention to the developmental origins of health and disease, the National Institute of Child Health and Human Development (NICHD) launched the Human Placenta Project in 2015 to increase understanding of the role of the placenta in health and disease.<sup>[5]</sup> In collaboration with Chinese colleagues, we launched the Chinese Human Placenta Project in September of the same year.<sup>[6]</sup> We also promoted placenta-related research in India.<sup>[7]</sup>

Reproduction, as the fundamental process of species propagation, is the basis of biodiversity. It starts with fertilization, continues through pregnancy to birth, and impacts the offspring throughout the entire lifespan. Reproduction is closely related to heredity, evolution, and even the origin of life.

Infertility is a pathological condition that affects up to 15.5% of reproductive-aged couples. Treatment options for infertility have evolved over time and have expanded to include the use of assisted reproductive technology (ART), a group of *in vitro* techniques, including *in vitro* fertilization, intracytoplasmic sperm injection, frozen embryo transfer, oocyte donation, blastocyst culture, intrauterine insemination, and preimplantation genetic testing for aneuploidy. Each of these techniques is correlated with obstetric or neonatal outcomes, affecting children and their health in adulthood. Pregnancies achieved by ART are associated with an increased risk of placental anomalies.<sup>[8]</sup> A recent meta-analysis of 161,370 ART pregnancies and 2,280,241 spontaneously conceived singleton pregnancies found increased risks for many obstetric complications with ART, including pregnancy-induced hypertension, placenta previa, placenta abruption, antepartum hemorrhage, oligohydramnios, cesarean delivery, preterm birth, very low birth weight, low birth weight, and perinatal mortality and morbidity.<sup>[9]</sup> It is well documented that ART can be associated with changes in placental morphology and structure, growth dynamics, imprinted and non-imprinted maternal or paternal genes, and other aspects regulating placentation.<sup>[10]</sup>

There is an urgent need to fill the gap between placental medicine and reproductive medicine. This journal, *Placenta and Reproductive Medicine* (PRM), aims to address this need and to present research that is at the cutting edge of pregnancy studies. PRM will focus on advanced issues of placental and reproductive medicine to bridge the gap between fundamental questions in placental development and function and questions in clinical reproductive

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medicine. PRM is also expected to be a platform for researchers, scientists, and physicians to exchange findings in placental and reproductive medicine and to increase the visibility of these fields.

We, the editors-in-chief, and the editorial board, which includes regional editors, section editors, review board members, and external advisors, are looking forward to working closely with authors and contributors to make PRM a valuable resource for readers. We wish to thank Scholar Media Publishing for providing technical support and publishing services for this journal.

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