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# Molecular Aspects of Medicine

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## Editorial

### Introduction to the special issue “Molecular Players in Early Pregnancy”

Successful pregnancy is quintessential for the survival and continued development of human being. Reproductive biology/medicine, accordingly, has become a highly important and actively evolving field in the past decades, highlighted by the 2010 Nobel Prize in Physiology or Medicine awarded to Dr. Robert G. Edwards, for his ground-breaking achievements in using IVF to treat human infertility. Despite these great advances, the efficiency of assisted reproductive technology is still relatively low and bears potential unpredictable risks (Davies et al., 2013); and the infertility issue is drawing increasing public attention due to its worldwide social and economic impact (Dey, 2010).

It has now been well-recognized that the early stage of pregnancy is most vulnerable and sensitive to internal and external stressors. And for many gestational complications and pregnancy loss, the origins have been seeded at very early stages around embryo implantation (Cha et al., 2012), while the underlying mechanisms are multifaceted and remain underexplored in many cases. To promote this particularly important field, we have hosted the international meeting focusing on peri-implantation research, the First SKLRB Symposia on ‘Frontiers in Peri-implantation Biology’, May 8–12, 2010, Beijing”. In that meeting, leading scientists in this field have come together and discussed the new findings and challenges in the field, which turn out to be a very successful one. Two years after that, we have launched the Second SKLRB Symposia on “Frontiers in Reproductive Biology” May 6–11, 2012, Beijing, continuing discussing the important issues of peri-implantation biology, as well as adding new topics such as Germ Cell Development and Gonadal Morphogenesis.

The papers presented in this special issue “Molecular Players in Early Pregnancy” are selected from the major topics of the previous two meetings, most of the review papers were co-contributed by 2–3 research groups that work in close collaborations, which in our belief, would ensure more comprehensive and unbiased contents of each topic. The five review papers covered a range of important issues at early pregnancy, with an emphasis on the molecular regulation and clinical implications. Research groups lead by Lei Li and Jurrien Dean reviewed our current understanding of sperm-oocyte recognition, maternal contribution, and maternal to zygotic transition in mammals (Li et al., 2013). Zernicka-Goetz Magdalena and Anna Ajduk summarized our current methods in selecting most healthy embryos that have been used in IVF clinics and describe new promising ones that need to be tested (Ajduk and Zernicka-Goetz, 2013). En-kui Duan, David Elad and Xiaoqin Ye groups together reviewed the molecular and biomechanical factors that lead the floating embryos to the correct intrauterine locations for implantation (Chen et al., 2013). Haibin Wang, Hongmei Wang and D. Randall Armant groups comprehensively reviewed our current understanding of physiological and molecular determinants that control embryo implantation (Zhang et al., 2013). Finally, Yan-ling Wang, Chun Peng and colleagues summarized the multiple factors that regulate placenta trophoblast cells differentiation and its pathological relevance to preeclampsia (Ji et al., 2013).

We would like to thank all the authors that contribute to the review articles and to the Editor-in-Chief for his great help in designing the topics and commissioning the review articles. We hope this exciting collection of articles on early pregnancy will be an enjoyable read and will ignite new ideas and directions for this not so young and yet still fascinating field.

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