

Embracing the Era of Post-Genomics

Tin-Lap Lee*

The Chinese University of Hong Kong, Hong Kong, China

Life stems from reproduction. The term “reproduction” has fascinated scientist for ages. French naturalist Jean-Baptiste Lamarck once mentioned “*It is not always the magnitude of the differences observed between species that must determine specific distinctions, but the constant preservation of those differences in reproduction*”. And we now know the differences lie largely on the life “codes” and highly orchestrated developmental programs during development. The quest to decode the reproductive processes and sexual disorders has come a long way. It all started with anatomical and functional understanding of the female and male reproductive tracts, followed by pathophysiology in menstrual cycle, gonadal function, gamete formation and development, to the processes in post-fertilization, such as embryo development, implantation, placentation, fetal development, and completion of pregnancy. Despite advances in surgical techniques and genetics, our understanding on reproductive health remains largely elusive. The application of molecular approaches in reproductive or sexual disorder treatment is still far from popular. What makes the situation even more challenging is the emerging complexity involved in reproductive health. The past decade has seen a remarkable shift in the demographics of childbearing in various countries. The number of advanced paternal and maternal aged parents has increased sharply, which translates to outbreak of various reproductive risks on the offspring. It is clear that certain genetic and neurological disorders like Autistic Spectrum Disorder (ASD) are age-related.

With the completion of genome projects, the advent of high-throughput genomics and advances in stem cell biology, there is a hope to those complex issues. The “big data” from genomics studies provides scientists an opportunity to interpret the data in a whole new dimension. The possibility of cellular reprogramming using Induced Pluripotent Stem Cells (iPSCs) and trans-differentiation holds new hopes in regenerative medicine. While these all sound promising, the benefits will only be translated effectively in reproductive medicine only if the biomedical scientists, clinicians and bioinformaticians work together to revolutionize the current research tools and methods with systematic and integrated approach. Examples include associating reproductive health information to phenotypes and markers, development of centralized portals for data collection in the clinic and tools for collating/integrating the datasets. This collaborative effort will help developing noninvasive diagnostics and prognostic markers for common reproductive health conditions, such as unexplained infertility, endometriosis, Polycystic Ovary Syndrome (PCOS), and fibroids.

Reproductive System & Sexual Disorders represents a central platform for scientists across multiple disciplines to report advances in their research or clinical discoveries, and to provide alternatives or novel approaches for diagnosis and treatment for reproductive and sexual disorders. I hope you will find the manuscripts useful, inspiring and a joy to read.

***Corresponding author:** Tin-Lap Lee, Department of Reproduction, Development and Endocrinology, The Chinese University of Hong Kong, Hong Kong, China, Tel: (852) 3943 4436; Fax: (852) 3943 1233; E-mail: tinlaplee@gmail.com

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