

**Mini-Symposium:
Morphological and PHysiological Research on Human Ova**

Preface

Junko OTSUKI

Mini-Symposium Editor

Nagai Clinic

E-mail: otsuki.midori.junko@gmail.com

Since the use of human oocytes for research is limited, the basic experimentation that would impact on reproductive medicine has mostly depended on rodent oocytes and embryos. However, as there are some significant differences between animal and human oocytes, the results may not always be relevant to human oocytes and it may not be safe to apply the findings to human reproductive practice. As it cannot be practical to perform molecular studies using human oocytes when hundreds of oocytes would be required, morphological research on human oocytes should receive a major focus at the present time.

In the USA president Obama has recently lifted the ban on funding of research in reproductive medicine and proposed support for “responsible oversight” of the human embryonic stem-cell research. Also the introduction of iPS cells, represents a great invention by Dr. Yamanaka, and this may provide exciting improvements in reproductive medicine for creating human oocytes and sperm and also in regenerative medicine.

However, in both situations, we have to be reminded that human oocytes have several dysmorphic phenotypes and that there are many factors responsible for their occurrence, and that these have not yet been clearly elucidated. Thus reproductive technology clinics should focus on methods for obtaining good quality oocytes as well as improving further ovarian stimulation protocols for assisted reproductive technology (ART). It is no longer disputed that the quality of oocytes is one of the most critical factors that influences the establishment of successful pregnancies.

In this mini-symposium Dr. Lopata introduces the history of the discovery of the mammalian ovum and the historical setting for human ova research. The morphological research in human oocytes, particularly the fine structure of human oogonia in fetal ovaries and progressive changes during folliculogenesis and oogenesis have been described by Dr. Sathanathan (This paper will be published in the next issue by JMOR). In addition, Dr. Morimoto presents studies on the cytoplasmic differentiation during *in vitro* maturation of oocytes. The important topics of dysmorphic phenotypes related to extracytoplasmic and in intracytoplasmic factors are examined by Dr. Ebner and Dr. Otsuki independently, to help us understand the aberrant phenomena and the possible consequences on embryonic development. Lastly we are provided with one of the new non-invasive evaluations for human oocyte quality. In this section Dr. Murakawa, discusses the very recent technology used for measuring the respiration activity of cumulus-oocyte complexes.