Mini-Symposium:
Contemporary Overview of the Role of Embryonic Stem Cells in Regenerative Medicine and ART

Preface

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The theme of this mini-symposium is a contemporary overview of the role of embryonic stem cells in regenerative medicine and ART.

Recently, Yamanaka and colleagues succeeded in reprogramming terminally differentiated cells into pluripotent cells, named induced pluripotent stem cells (iPSCs), by introducing the expression of defined transcription factors. The technologies for deriving stem cells from embryonic resources are important practical aspects of mammalian reproductive biology. These technologies make it possible not only to produce patient-specific pluripotent stem cells for transplantation therapy without immune rejection, but also to analyze the mechanisms causing diseases as pointed out by Dr. Hayashi.

These technologies are expected to contribute greatly to the generation of germ cells as well as to the development of tissue sources and to research tool. For the development of efficient regenerative medicine, it will be necessary to have adequate knowledge of the biological characteristics of germ cells and growth factors. Fortunately, we can read the latest study results of many leading reproductive biologists and learn about the excellent solutions proposed for regenerative medicine and ART in this mini-symposium.

This mini-symposium, “Contemporary overview of the role of embryonic stem cells in regenerative medicine and ART” will benefit greatly all those who are interested in this area, because the list of contributors is a role call of those who are acknowledged experts in this area. Most importantly, they are all actively involved in presenting excellent new techniques based on their own theories of regenerative medicine and ART.

As expected from the recent high-impact activities of the contributors, this mini-symposium now covers all the important innovations related to regenerative medicine and ART .One of our ultimate goals is to identify factor(s) that can induce ‘transdifferentiation’ process of somatic cells where conversion of somatic cell to gametes takes place. Understanding such mechanisms certainly requires *in vitro* gametogenesis, nuclear transplantation and stem cell technologies as Dr. Takeuchi has explained.

I hope that the new topics we introduce in this field stimulate your interest in embryonic stem cells and encourage many young researchers to enter in this field.

That is the goal of this mini-symposium.