RECONSTITUTION OF OOGENESIS IN DISH USING MOUSE EMBRYONIC STEM CELLS

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Artificial gametes that are produced in culture from pluripotent stem cells would have a huge impact on not only infertility treatment but also understanding of molecular mechanism underlying germ cell development. Pluripotent stem cells, such as embryonic stem cells (ESCs) and induced pluripotent stem cells (iPSCs), are able to differentiate into all cell lineages of the embryo proper, including germ cells. We recently established a culture system that induces functional mouse primordial germ cells (PGCs) from ESCs/iPSCs. PGCs produced from ESCs/iPSCs are fully potent, since they differentiate into oocytes, which in turn give rise to healthy individuals. However, this system recapitulates a quite short window of embryogenesis, from the blastocyst to migratory PGC stage, requiring only 4 to 5 days *in vivo*. There thus remains a long period of time, perhaps over a month, that must be reconstituted to produce mature oocytes in culture. In this meeting, we will introduce attempts to develop a culture system that produce mature oocytes in culture.