

***In Vitro* Growth and Development of Mouse Preantral Follicles**

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The mammalian ovary has a large number of primordial and preantral follicles, which are a potential source of oocytes for the *in vitro* mass production of embryos. Several *in vitro* culture systems have been developed to support the growth and development of oocytes from mouse preantral follicles. Under the appropriate condition, meiotically incompetent oocytes from preantral follicles can grow to final size and complete nuclear maturation *in vitro*. Furthermore, the successful production of live young from *in vitro* grown and matured oocytes demonstrates that oocytes from preantral follicles are able to acquire full developmental capacity *in vitro*. However, the efficiency of *in vitro* production of embryos from mouse preantral follicles is still low. In farm animals as well as human, the growth of oocyte from preantral follicle to the meiotic competence stage has yet to be demonstrate. Therefore, further studies to improve the culture condition or to develop new culture system should be needed in the future. In addition, the visible progress in the establishment of the *in vitro* culture system for preantral follicles of farm animals and human could help to enlarge the populations of valuable agricultural, pharmaceutical product-producing, and endangered animals, and to rescue the oocytes of women about to undergo clinical procedures that jeopardize oocytes.