

Recent Progress in Reproductive Technologies Based on the Common Marmoset (*Callithrix jacchus*) : Application of ES and iPS cells

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Common marmoset (*Callithrix jacchus*) shows many unique features compared with other laboratory primates for studying reproductive biology. They are the only anthropoid primates that routinely ovulate multiple oocytes per ovarian cycle, have a short gestation period and reach sexual maturity at around 1 year of age. Moreover, it is possible to synchronize the ovarian cycle, and efficient protocols for superovulation have been developed over the last few decades. As this species is increasingly used in reproductive technology, basic technologies have been established to rival those available in Old World primates.

In 2005, common marmoset embryonic stem (ES) cell lines were established and applied to several differentiation studies, which accelerated the development of regenerative therapies using human ES cells, and to the production of transgenic animals for human disease. Last year, we have reported the creation of the first transgenic primates able to pass on a foreign gene to their offspring. More recently, we also generated marmoset induced pluripotent stem (iPS) cells with transgene silencing, normal karyotypes and multipotencies. In addition to inimitable reproductive features of marmoset, recent progress in reproductive technologies will provide a powerful preclinical model for studies in the field of regenerative medicine.

Keywords: ES cells, Common marmoset, iPS cells, Reproductive technology