CDB SEMINAR

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Thursday, April 9, 2009
16:00~17:00 C1F CDB Auditorium

Developmental Regulation of Avian Stem Cells and the Application for Organ Regenerations

Summary

Avian stem cells derived from early embryos should be self-renewal and maintain pluripotentcy both in vivo and in vitro. Application of avian stem cell technologies could lead genetic alterations of the avian genome and the germline or organ regenerations. The stem cells have also been considered as one of the most useful tools for genetic conservation of endangered birds and development of novel poultry breeding systems. However, any complete ES or EG cells have not been established in birds, yet. Recent progress in embryo engineering and molecular genetic techniques made it possible to isolate the avian stem cells from early embryos accurately. The avian stem cells were obtained from the central area of the blastoderms. The obtained stem cell clusters were dissociated to single cell. The cells were used for production of somatic and germline chimeras. The replacement of the recipient's germline with a the donor cells provided a powerful tool for production of germline chimeras and transgenic birds. The stem cells could be differentiated into skin, muscle and feather in chimeric birds. Culturing the stem cells in vivo and in vitro made regeneration of leg and heart. As above, novel strategies have been established for developmental regulation of the stem cells in birds. The established strategies by our research team could be contributed for developmental biology and regenerative medicine.

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