

IMEG Seminar Series

The road to global science

Dr. Qi-Long Ying Professor, Stem Cell Biology and Regenerative



Medicine, Eli and Edythe Broad Center for Regenerative Medicine and Stem Cell Research at USC, Keck School of Medicine, University of South California, USA

Germline competent embryonic stem cells derived from avian species

March 17th, 2022, 9:00~10:00

The seminar series is for all students and researchers in Kumamoto University. Check your email and find the Zoom ID and passcode.

Abstract

Germline competent embryonic stem cells (ESCs) have been derived from mice and rats, but not from any other species. Here we report the development of conditions for the derivation and propagation of ESCs from chickens and several other avian species. Chicken ESCs express core pluripotency markers and can efficiently differentiate into cells of all three germ layers. Furthermore, chicken ESCs can form high rates of chimerism when injected into chicken embryos both ex ovo and in ovo. More importantly, chicken ESCs can give rise to germ cells both in vitro and in ovo, indicating that chicken ESCs are germline competent. Interspecies chimeras can also be generated by injecting other avian ESCs into chicken embryos. Establishment of germline competent avian ESCs opens up a new avenue for producing genetically engineered avian species.

Dr. Ying is the originator of 2i culture for mouse ES cell. (Ying et al., Nature, 2008)

You will be fascinated by,

Remarkable cell lines: ESCs

When ESC divides, it can either produce identical copies (self-renewal) or other more specialized cell types (differentiation). How an ESC makes this choice?

ESCs from chicken eggs.

The work on maintaining chicken ESC provides insight into stem cell pluripotent and evolutionary developmental biology.

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