CDB SEMINAR

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11:00~12:00 C1F CDB Auditorium

Engineering Developmental Plasticity: Mechanisms of Germ Cell and Multipotent Cell Development

Abstract

Developmental plasticity is an essential and fundamental ability for a living individual to develop, regenerate and survive successfully in response to a various environment, and the cellular multipotency plays a key role in this survival process. The cellular multipotency is controlled by a fine combination of both genetic and epigenetic mechanisms, and thus an integrative approach is important to understand its complex mechanism especially in germ cell and stem cell development. Echinoderms, a sister group to chordates, are known for having remarkable developmental plasticity. Adults can regenerate entire segments including even gonads, and embryonic cells maintain multipotency until late in their development: Cells from other lineages can transfate and compensate for a missing part of the embryo. Echinoderms yet have a fundamental similarity to Vertebrates in their developmental style such as having three tissue layers (ectoderm, endoderm and mesoderm) to regulate. The amazing plasticity of echinoderm cells serves as a good experimental tool to study the basic mechanisms of cellular multipotency conserved among deuterostomes. In this seminar, by using echinoderms' multipotent cells, I would like to share our recent findings that include, 1) the mechanisms of Primordial Germ Cell (PGC) specification, 2) the molecular mechanism and function of Vasa in a cell cycle progression, and 3) the mechanisms of chromatin activity that epigenetically regulate multipotent cell and germ cell development.

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