CDB SEMINAR

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16:00~17:00 A7F Seminar Room

Molecular mechanisms of small RNA pathways in *Drosophila*

Summary

Small RNA mediated gene regulation is recognized as a major gene regulatory mechanism in higher eukaryotes. microRNAs (miRNAs) and small interfering RNAs (siRNAs) are classes of small regulatory RNAs that function in parallel molecular pathways. miRNAs are found in most animal species and dysfunction of miRNA mediated gene regulation often leads to diseases in humans. Endogenous siRNAs also have essential roles in mouse oocyte development.

To better understand the mechanisms and functions of small regulatory RNAs, we have been using a range of approaches in *Drosophila*. Our analysis of small RNA libraries has revealed novel small RNA biogenesis pathways, including the mirtron and endo-siRNA pathways. Genome-wide analysis of small RNA abundance in mutants or purified Argonaute complexes also allowed us to decipher the molecular mechanisms of small RNA biogenesis. I will discuss how these small RNA pathways are organized in the cells and the roles of small RNA pathways in gene regulation.

References

Okamura, K., and Lai, E.C. (2008). Endogenous small interfering RNAs in animals. Nat. Rev. Mol. Cell Biol. 9, 673-678.

Okamura et al. (2009). Distinct mechanisms for microRNA strand selection by *Drosophila* Argonautes. Mol. Cell 36, 431-444.

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