BDR SEMINAR in Kobe

"CDB SEMINAR" and "QBiC SEMINAR" have been renamed "BDR SEMINAR".

Masahito Ikawa

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Thursday, October 11, 2018

13:00-14:00, Seminar Room A7F

CRISPR/Cas9 mediated genome editing in mice and its application for the study of reproduction

Summary

CRISPR/Cas9 system has opened the new era for reverse genetics. To date, we have knocked out 179 testis abundant genes and analyzed the phenotypes in vivo. Whereas 110 of the KO mouse lines were fertile and did not show any drastic phenotypes, 2 KO mouse lines showed lethality. The remaining 67 KO mouse lines showed infertility or subfertility and propelled us to study in vivo reproduction mechanisms (1-4). However, the mosaicism in founder generation complicated the genotyping and phenotyping analysis. Therefore, we applied CRISPR/Cas9 mediated genome editing in the GFP-labelled ES cells. The combination of ES mediated genome editing and chimeric analysis in founder generation would provide an alternative strategy for gene function study in vivo (5). Our approaches are highly relevant in this fiscally tight funding period and postgenomic age when large numbers of genomes are being analyzed for disease association.

1. Miyata H. et al., ***Science***. 2015, 350:442-5.
2. Miyata H. et al., ***PNAS***. 2016, 113:7704-10.
3. Kato K et al., ***Nat Commun***. 2016, 7:12198.
4. Satouh Y. and Ikawa M., ***TIBS.*** 2018 (in press) review
5. Oji A. et al., ***Sci Rep***. 2016, 6:31666.

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