講演会開催のご案内

演者：　西園 啓文 先生

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日時：　2020年 3月 4日(水) 17:30 ～ 18:30

場所：　セミナー室８（薬学研究棟7F）

Methods to generate animal models and application for analysis of glycine-related molecules during development

(子宮内及び卵管内in vivoゲノム編集によるモデル動物作製と
グリシンレセプターα4ノックアウトマウスの表現形解析)

Recent developments of CRISPR-Cas9 genome editing methods have provided easy and efficient means to generate genetically modified mice. We have optimized and used a variety of methods to specifically manipulate specific genes, including a method to introduce the CRISPR/Cas9 machinery into fertilized eggs (Nishizono et al., JoVE 2020; Darwish et al., J Neurosci Methods. 2019), oviduct (iGONAD; Takebayashi et al., Sci Rep 2018), fetal brain in utero (SLENDR; Mikuni and Nishiyama et al., Cell 2016), or in the adult brain (vSLENDR; Nishiyama and Mikuni et al., Neuron 2017). In our laboratory, we are generating a variety of genetically modified mice for neuroscience and developmental biology using these methods.

Using genetic approaches, I have analyzed the genes required for embryo development. It is widely known that the development of fertilized eggs can vary to a large degree among those even from the same parents. Some fertilized eggs stop dividing during preimplantation development, while their littermate eggs can reach the blastocyst stage and become implanted. Using DBA/2 and C67BL/6 mouse fertilized eggs as a model of low- and high- developmental fertilized eggs, respectively, we performed comprehensive metabolome analysis using capillary electrophoresis mass spectrometry (CE-MS). As a result, we havefound amino acids and their metabolic intermediates that increase in correlation to the developmental capacities of embryos. Furthermore, RNA-seq, pharmacological and genetic analyses revealed that glycine plays a major role in early development. Moreover, the glycine receptor α4 subunit, whose function was previously unknown, was found to be explicitly expressed in early mouse embryos and to have a role in supporting preimplantation development (Nishizono et al., Reproduction 2019). In my lecture, we will discuss the functions of glycine receptor a4 and glycine metabolizing enzymes in early embryos and the brain.

多数の皆様のご来聴をお待ちしております。

本講演は日本語で行われます。
The seminar will be given in Japanese.

連絡先：
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