December.2020

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Theme

● Genetically modified mouse ● Kidney disease ● Diabetes

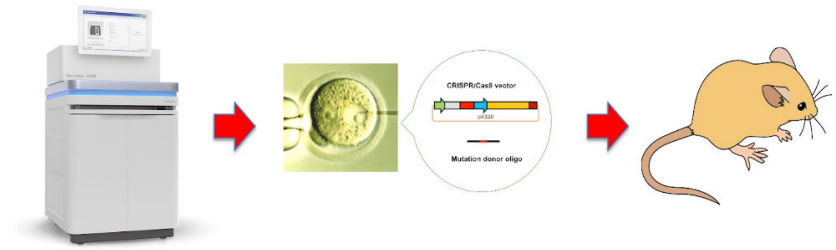
Keyword Genetically modified mice, genome editing, kidney disease, diabetes

Highlight

Genome editing using CRISPR/Cas9 can produce genetically modified mice using fertilized mouse eggs. Not only knockout, knockin, and conditional knockout mice, human disease models can be rapidly created by introducing mutations identified in human cases into mice. These mouse models are useful to identify molecular mechanisms and develop treatment methods. In addition, we are analyzing functions of Large MAF transcription factors using genetically modified mice, which can be applied to the study of kidney disease and diabetes.

Collaborators

Associate Professor; Takashi Kudo, Eiji Warabi
Assistant Professor; Michito Hamada, Akihiro Kuno



Whole genome sequencing analysis of human patients

Generation genotype copy mouse by using CRISPR/Cas9

Check phenotype of genotype copy mouse

Applications and Prospects

●Rapid production of genetically modified mice and human disease model mice by genome editing using CRISPR/Cas9.

●Development of glomerular disease prevention and onset suppression methods by enhancing renal podocyte function.

●Maintaining pancreatic β-cell function and promoting regeneration method of pancreatic β-cell.

Literature, intellectual property, work

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●Jung Y, et al. Isl1β Overexpression With Key β Cell Transcription Factors Enhances Glucose-Responsive Hepatic Insulin Production and Secretion. Endocrinology. 2018 Feb 1;159(2):869-882.