C57BL/6JGpt-Slc34a1-CreERT2-EGFP

Strain Name： C57BL/6JGpt-*Slc34a1*$^{em1Cin(CreERT2-EGFP)}$/Gpt
Strain Type： Knock-in
Strain Number： T052991
Background： C57BL/6JGpt

Description

This mouse strain expresses CreERT2 inducible recombinase [1] under the control of the mouse *Slc34a1* endogenous promoter, EGFP-CreERT2 was inserted downstream of the start codon of *Slc34a1* gene by CRISPR/Cas9 technology. When crossed with a strain with loxP site flanked sequence in its genome, Cre-mediated recombination will result in excision of the DNA fragment between the two loxPs in proximal tubule epithelial cells after tamoxifen administration. Note: mild CreER leaky activity was also observed in some cells in kidney without tamoxifen treatment.

Strategy

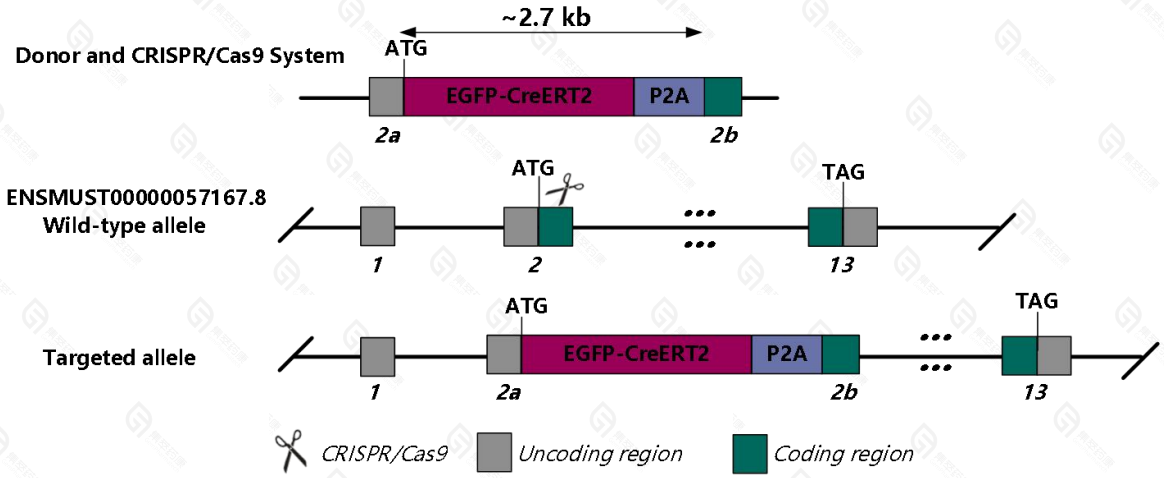

Fig.1 Schematic diagram of C57BL/6JGpt-Slc34a1-CreERT2-EGFP model strategy.

Applications

1. Cre tool mice for specific, tamoxifen dependent induction of loxP recombination in proximal tubule epithelial cells [2].

Data support

1. Validation methods & notes

Slc34a1-CreERT2-EGFP mice was crossed with CAG-loxp-ZsGreen-Stop-loxp-tdTomato mice with ubiquitous reporter expression (hereafter referred as CAG-G/R mice), Cre-mediated recombination will lead to excision of ZsGreen and the stop cassette and expression of tdTomato, thus gain of red fluorescence will indicate Cre activity. Fluorescence imaging of frozen sections were performed to exhibit Cre activity in various tissues and organs. Imaging of sections were performed under a 200x microscopy. Flow cytometry analysis of splenic cells was performed to exhibit Cre activity. For tamoxifen administration, 0.25 mL of 5 mg/mL tamoxifen was treated through intraperitoneal injection daily from P40 to P46 (5.7 w~6.6 w). Note: these results may only represent the activity of CreERT2 in this strain under this certain tamoxifen treatment condition at the identical stage. Recombinase activity may be different at other stages or under different tamoxifen induction conditions in your application.

2. Timeline of tamoxifen treatment and imaging

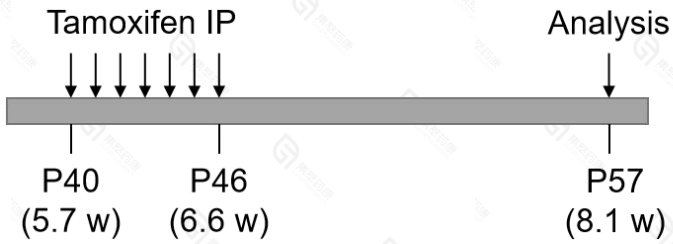

Fig 2. Timeline of tamoxifen treatment and experiment analysis of Slc34a1-CreERT2-EGFP mice.

3. Images of tissues and organs with obvious Cre activity

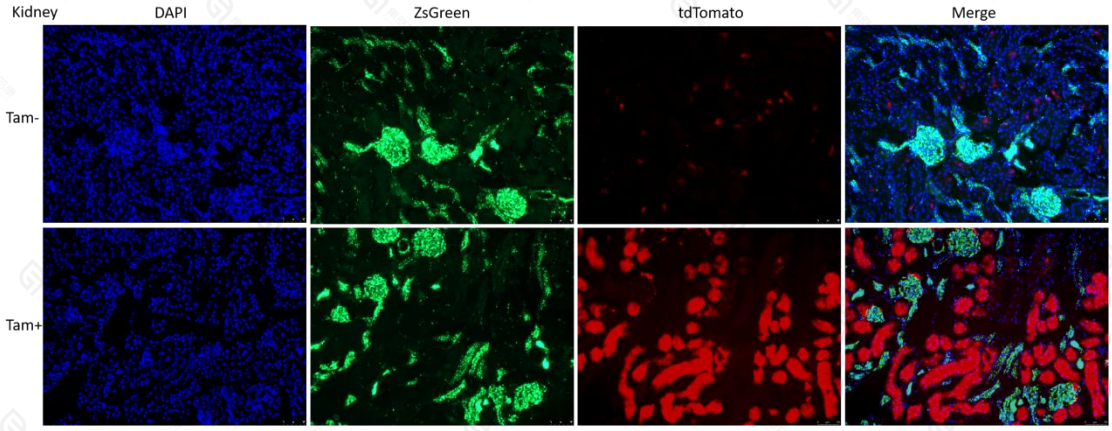

Fig 3. Fluorescence imaging of tissues and organs with obvious Cre activity.

Organ name was indicated in the left top of each subfigure group. Tam-: Slc34a1-CreERT2-EGFP, CAG-G/R double positive individuals without tamoxifen administration; Tam+: Slc34a1-CreERT2-EGFP, CAG-G/R double positive individuals with tamoxifen administration.

Reference

1.Feil R, Wagner J, Metzger D, et al. "Regulation of Cre recombinase activity by mutated estrogen receptor ligand-binding domains." Biochem Biophys Res Commun, 1997, 237(3): 752-757.

2.Kusaba T, Lalli M, Kramann R, et al. Differentiated kidney epithelial cells repair injured proximal tubule. Proc Natl Acad Sci U S A, 2014, 111(4): 1527-32.