C57BL/6JGpt-Mcam-CreERT2

Strain Name： C57BL/6JGpt-*Mcam*$^{em1Cin(CreERT2-P2A)}$/Gpt
Strain Type： Knock-in
Strain Number： T037362
Background： C57BL/6JGpt

Description

This mouse strain expresses CreERT2 inducible recombinase [1] under the control of the mouse *Mcam* endogenous promoter, CreERT2-P2A was inserted downstream of the start codon of *Mcam* 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 vascular endothelial cells after tamoxifen administration. Recombinase activity after tamoxifen induction was also detected in brain, heart, intestine, stomach and liver.

Strategy

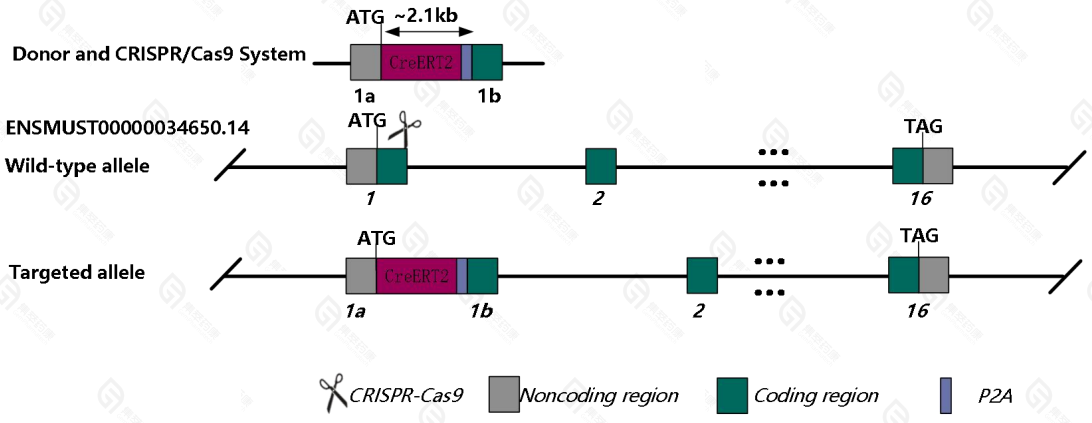


Fig.1 Schematic diagram of C57BL/6JGpt-Mcam-CreERT2 model strategy.

Applications

1. Cre tool mice for specific, tamoxifen dependent induction of loxP recombination in vascular endothelial cells.

Data support

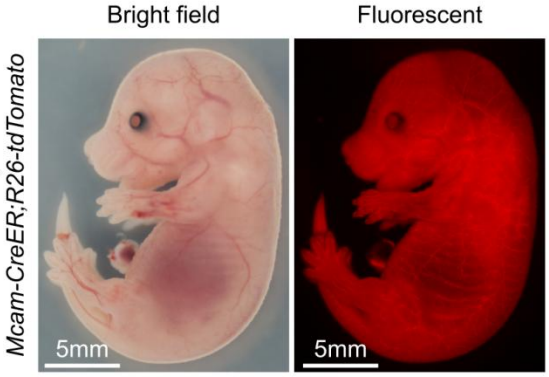
1. Validation methods & notes

Mcam-CreERT2 mice was crossed with Rosa26-loxP-Stop-loxP-tdTomato mice with ubiquitous reporter expression (hereafter referred as Rosa26-lsl-tdTomato mice), Cre-mediated recombination will lead to excision of stop cassette and expression of tdTomato, thus red fluorescence in tissues will indicate Cre activity. Tamoxifen was treated at E13.5, and embryos were collected and imaged at E15.5. Vascular system in the whole Mcam-CreERT2, Rosa26-lsl-tdTomato double positive embryo were labeled with tdTomato. Detailed analysis of organs showed that red fluorescence was detected in brain, heart, intestine, stomach and liver. Colocalization of CDH5 immunostaining and tdTomato fluorescence in embryo liver indicated Cre activity in vascular endothelial cells.

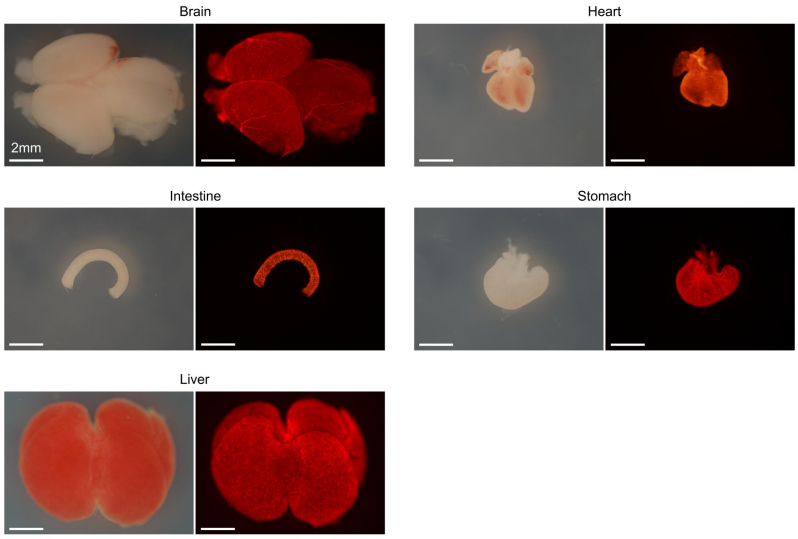
2. Timeline of tamoxifen treatment and imaging

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

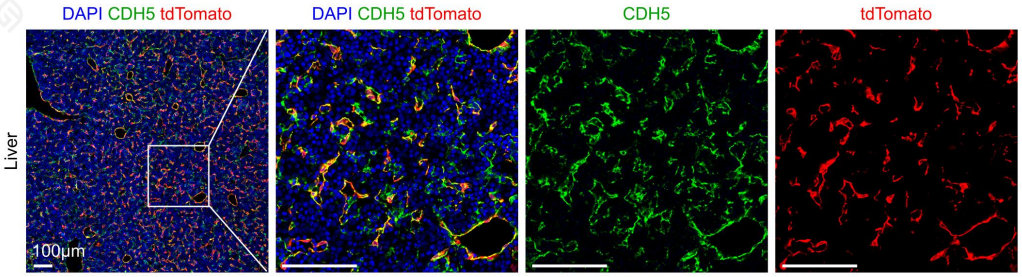
3.The Mcam-CreERT2, Rosa26-lsl-tdTomato embryo at E15.5 after treatment.



4. The brain, heart, intestine, stomach and liver at E15.5 (from the same embryo in 2)



4. CDH5 immunofluorescence and tdTomato expression in a frozen section of E15.5 embryo liver after treatment



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.