C57BL/6JGpt-Tek-iCre

Strain Name： C57BL/6JGpt-*H11*$^{em1Cin(Tek\text{-}iCre)}$/Gpt
Strain Type： Knock-in
Strain Number： T003764
Background： C57BL/6JGpt

Description

This mouse strain expresses codon optimized iCre recombinase [1] under the control of the mouse endogenous *Tek* promoter/enhancer, the construct was precisely inserted into the H11 safe harbor site in mouse Chr11 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 endothelial cells and hematopoietic cells. Recombinase activity was detected in a proportion of cells in heart, spleen, lung, uterus and brain. Note: The expression analysis of similar strains showed that Cre recombinase activity caused the deletion of target gene fragments anchored by loxP sites in endothelial cells, female germ cells and hematopoietic cells. The genetic characteristics indicated that low frequency targets also appeared in male germ cells [2].

Strategy

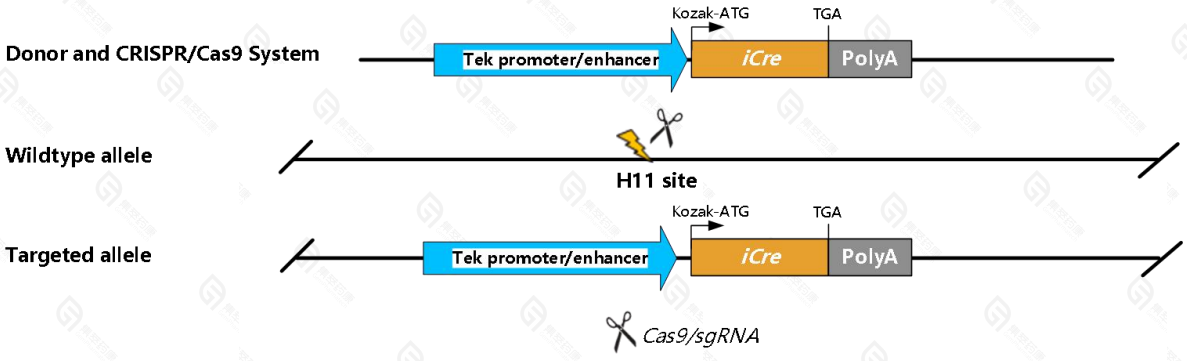


Fig.1 Schematic diagram of C57BL/6JGpt-Tek-iCre model strategy.

Applications

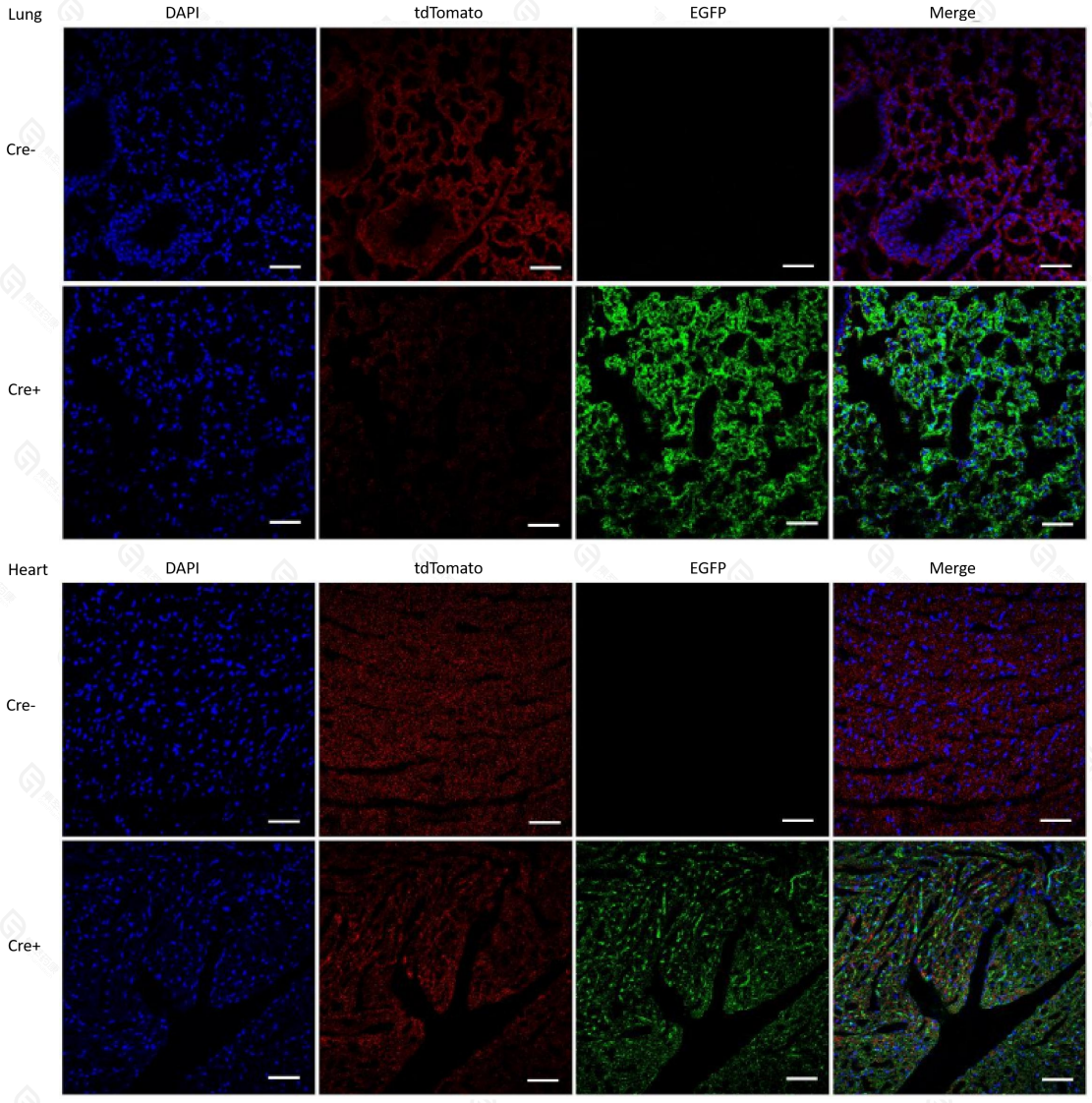
1. Cre tool mice for specific induction of loxP recombination in endothelial cells and hematopoietic cells [3-4].

Data support

1. Validation methods & notes

Tek-iCre mice was crossed with Rosa26-loxP-tdTomato-loxP-GFP mice with ubiquitous reporter expression, Cre-mediated recombination will lead to excision of tdTomato and expression of GFP, thus loss of red fluorescence and gain of green 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. Note: these results may only represent the activity of Cre in this strain at the identical stage. Recombinase activity may be different at other stages in your application.

2. Images of tissues and organs with obvious Cre activity



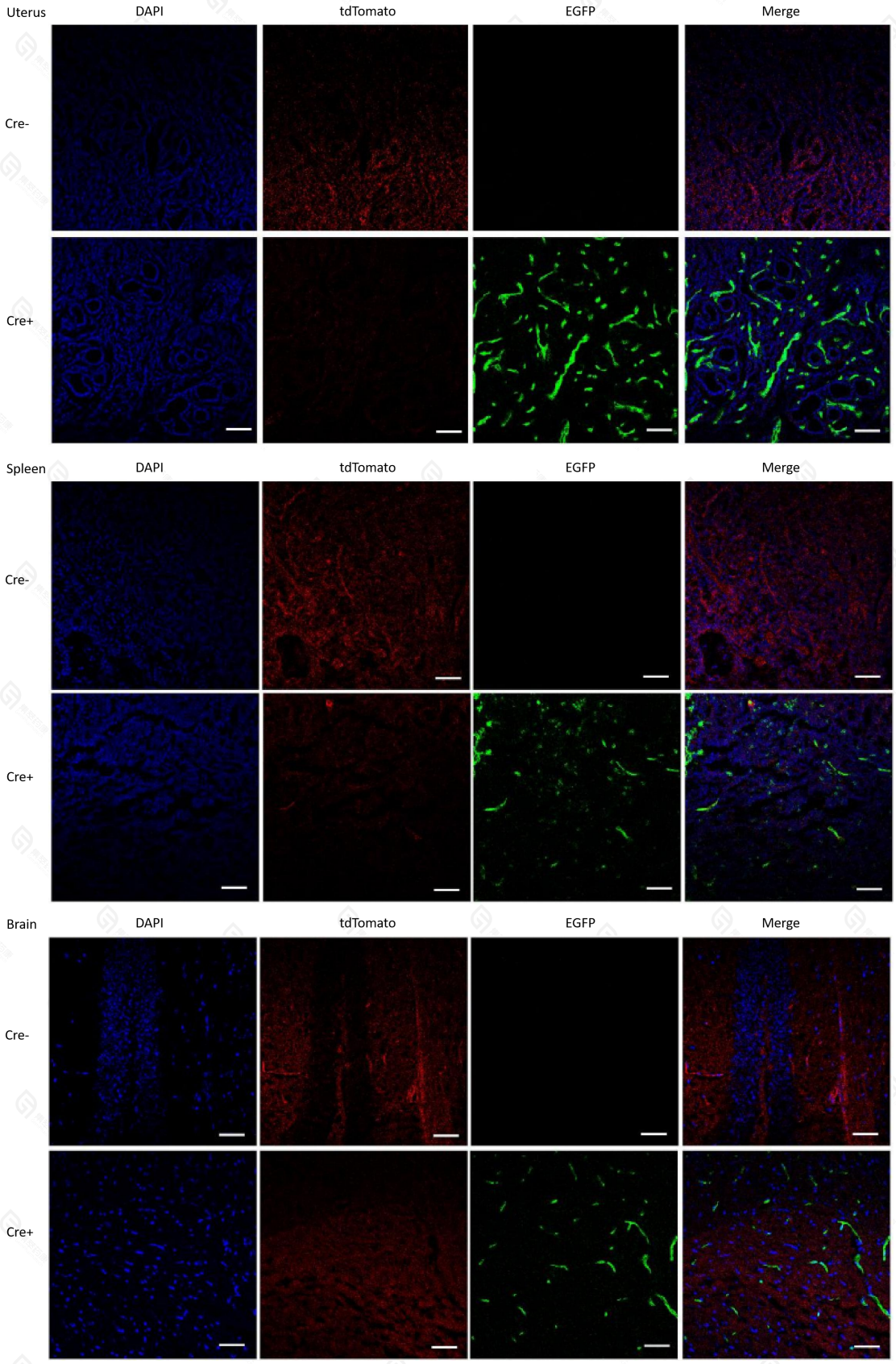
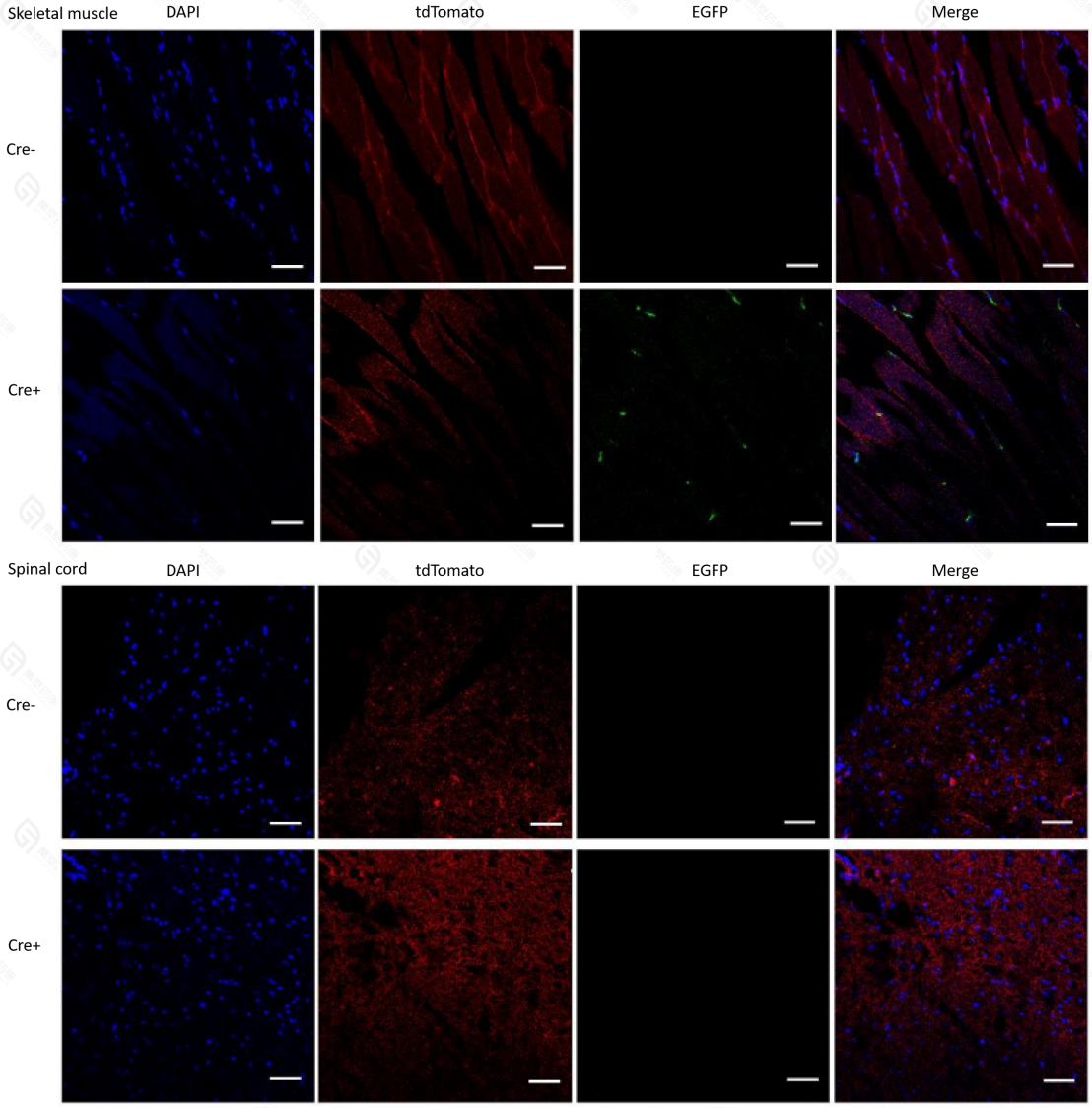
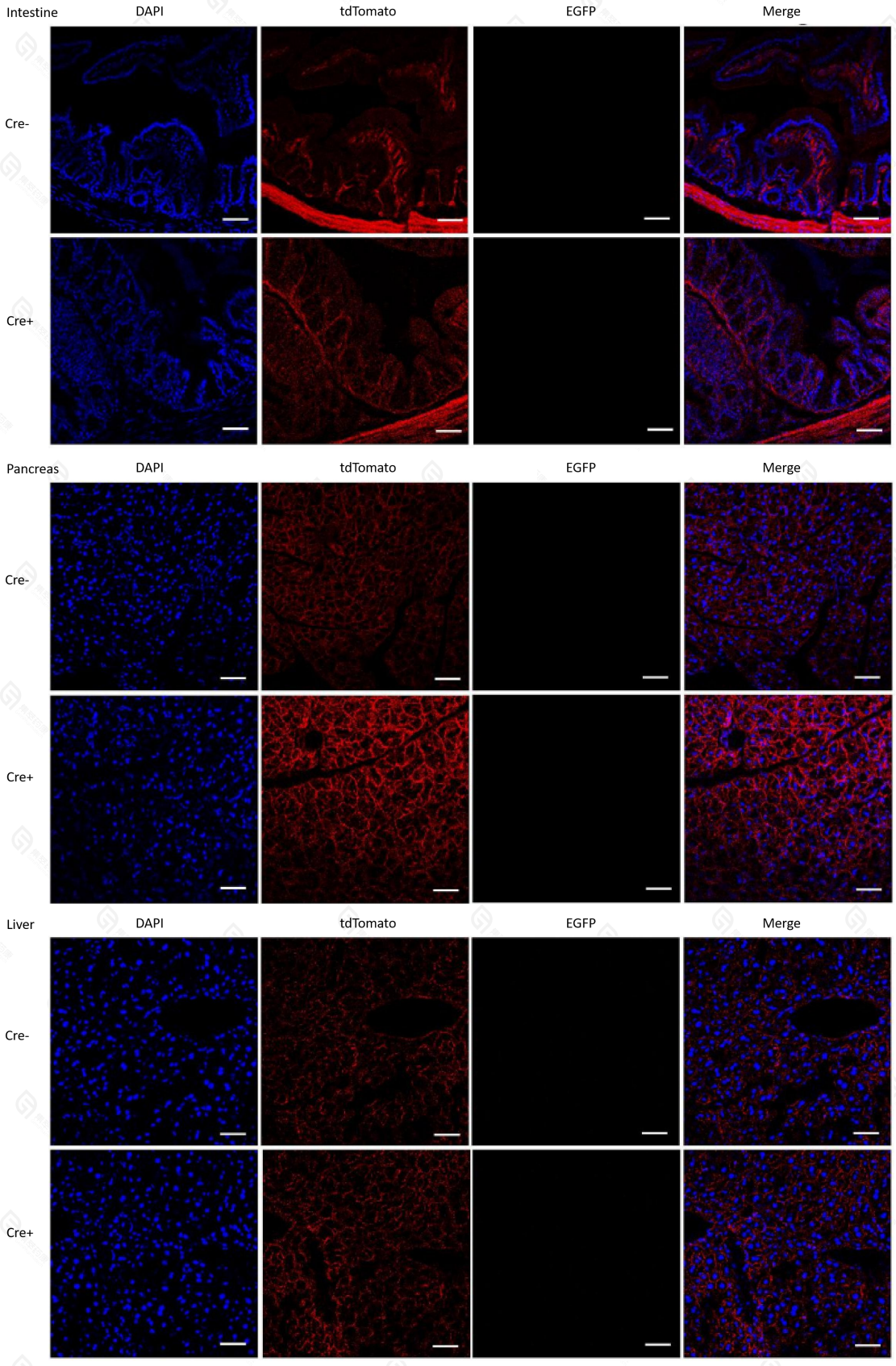

Uterus
DAPI
tdTomato
EGFP
Merge
Cre-
Cre+
Spleen
DAPI
tdTomato
EGFP
Merge
Cre-
Cre+
Brain
DAPI
tdTomato
EGFP
Merge
Cre-
Cre+

Fig 2. Fluorescence imaging of tissues and organs with obvious Cre activity.

Organ name was indicated in the left top of each subfigure group. Cre-: Rosa26-loxP-tdTomato-loxP-GFP single positive individuals; Cre+: Tek-iCre, Rosa26-loxP-tdTomato-loxP-GFP double positive individuals.

3. Images of tissues and organs with little or no Cre activity




Intestine
DAPI
tdTomato
EGFP
Merge
Cre-
Cre+
Pancreas
DAPI
tdTomato
EGFP
Merge
Cre-
Cre+
Liver
DAPI
tdTomato
EGFP
Merge
Cre-
Cre+

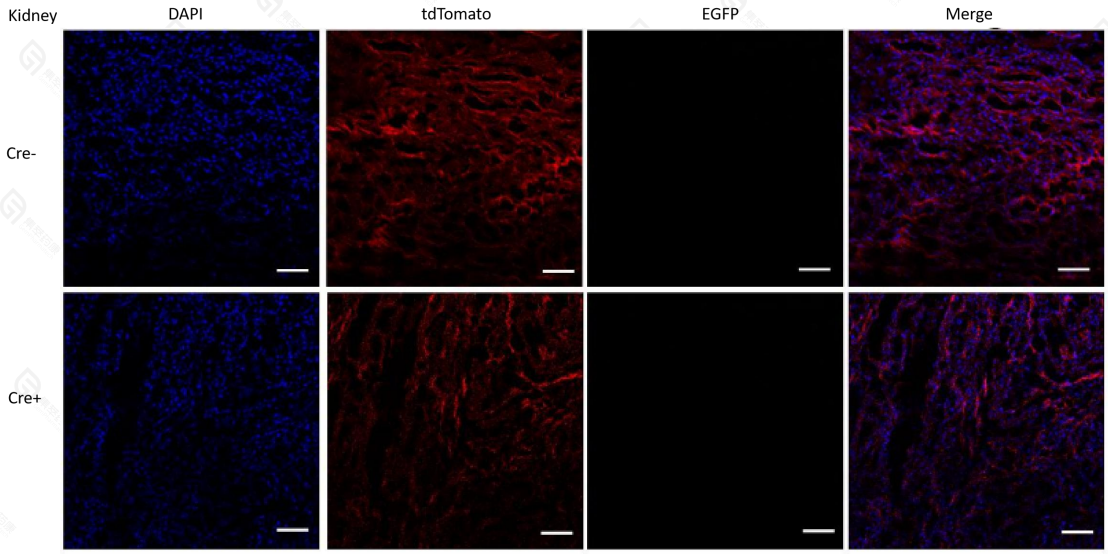


Fig 3. Fluorescence imaging of tissues and organs with little or no Cre activity.
Organ name was indicated in the left top of each subfigure group. Cre-: Rosa26-loxP-tdTomato-loxP-GFP single positive individuals; Cre+: Tek-iCre, Rosa26-loxP-tdTomato-loxP-GFP double positive individuals.

Reference

1.Shimshek D R, Kim J, Hübner M R, et al. "Codon-improved Cre recombinase (iCre) expression in the mouse." genesis 2002, 32(1): 19-26.
2.Schlaeger TM, Bartunkova S, Lawitts JA, et al. Uniform vascular-endothelial-cell-specific gene expression in both embryonic and adult transgenic mice. Proc Natl Acad Sci U S A, 1997, 94(7): 3058-63.
3.Kisanuki YY, Hammer RE, Miyazaki J, et al. Tie2-Cre transgenic mice: a new model for endothelial cell-lineage analysis in vivo. Dev Biol, 2001, 230(2): 230-42.
4.Batard P, Sansilvestri P, Scheinecker C, et al. The Tie receptor tyrosine kinase is expressed by human hematopoietic progenitor cells and by a subset of megakaryocytic cells. Blood, 1996, 87(6): 2212-20.