C57BL/6JGpt-H11-Vil1-CreERT2

Strain Name： C57BL/6JGpt-*H11*$^{em1Cin(pVil1\text{-}CreERT2)}$/Gpt
Strain Type： Knock-in
Strain Number： T004829
Background： C57BL/6JGpt

Description

This mouse strain expresses CreERT2 inducible recombinase [1] under the control of the 9 kb mouse *Vil1* promoter, 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 epithelia of intestine and colon after tamoxifen administration. Recombinase activity after tamoxifen induction was also detected in a proportion of cells in stomach and kidney. Note: mild CreER leaky activity was also observed in some cells in intestine and colon without tamoxifen treatment.

Strategy

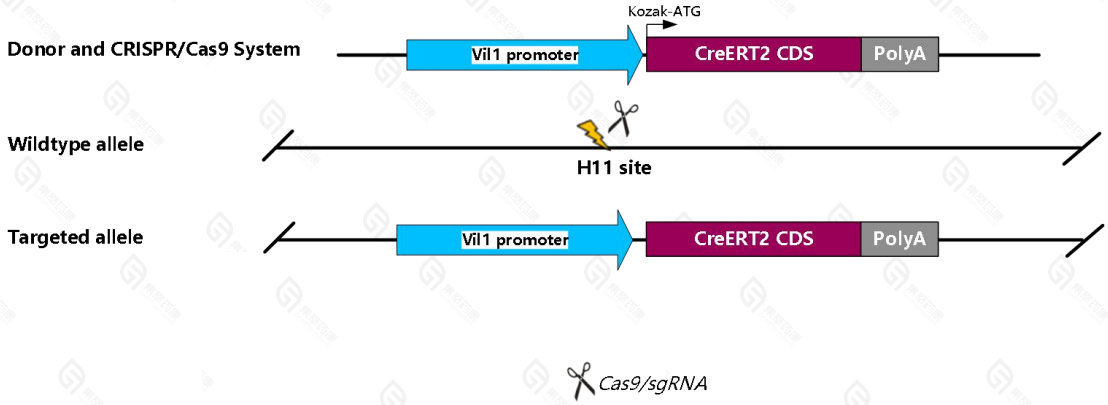


Fig.1 Schematic diagram of C57BL/6JGpt-H11-Vil1-CreERT2 model strategy.

Applications

1. Cre tool mice for specific, tamoxifen dependent induction of loxP recombination in intestinal epithelia of the duodenum, jejunum, ileum, and colon [2].

Data support

1. Validation methods & notes

H11-Vil1-CreERT2 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 loss of green fluorescence and 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. For tamoxifen administration, 0.25 mL of 5 mg/mL tamoxifen was treated through intraperitoneal injection daily from P44 to P50 (6.2 w~7.1 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

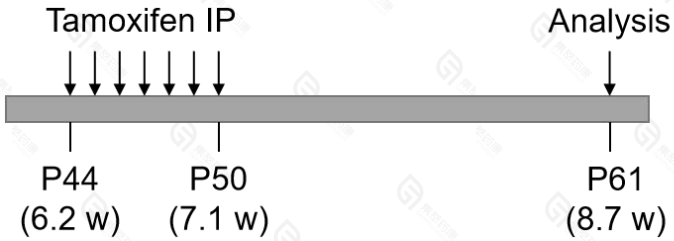
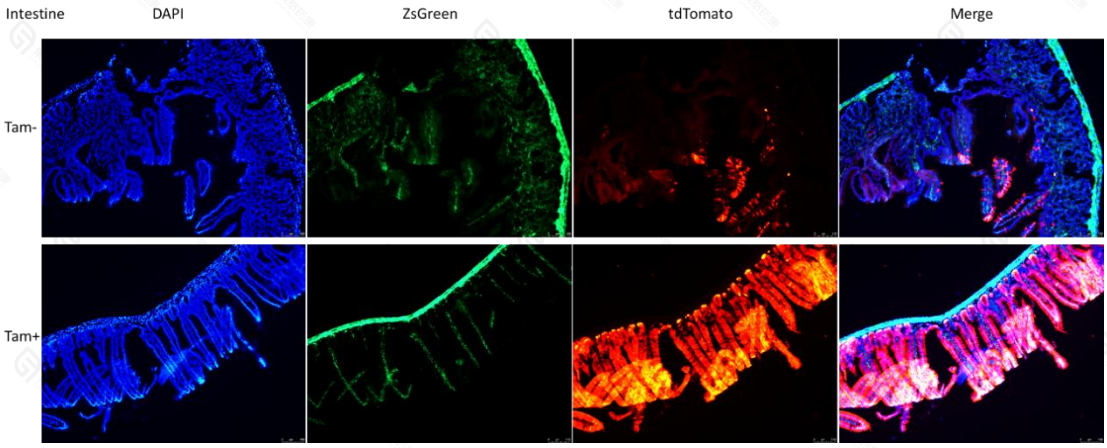


Fig 2. Timeline of tamoxifen treatment and experiment analysis of H11-Vil1-CreERT2 mice.

3. Images of tissues and organs with obvious Cre activity



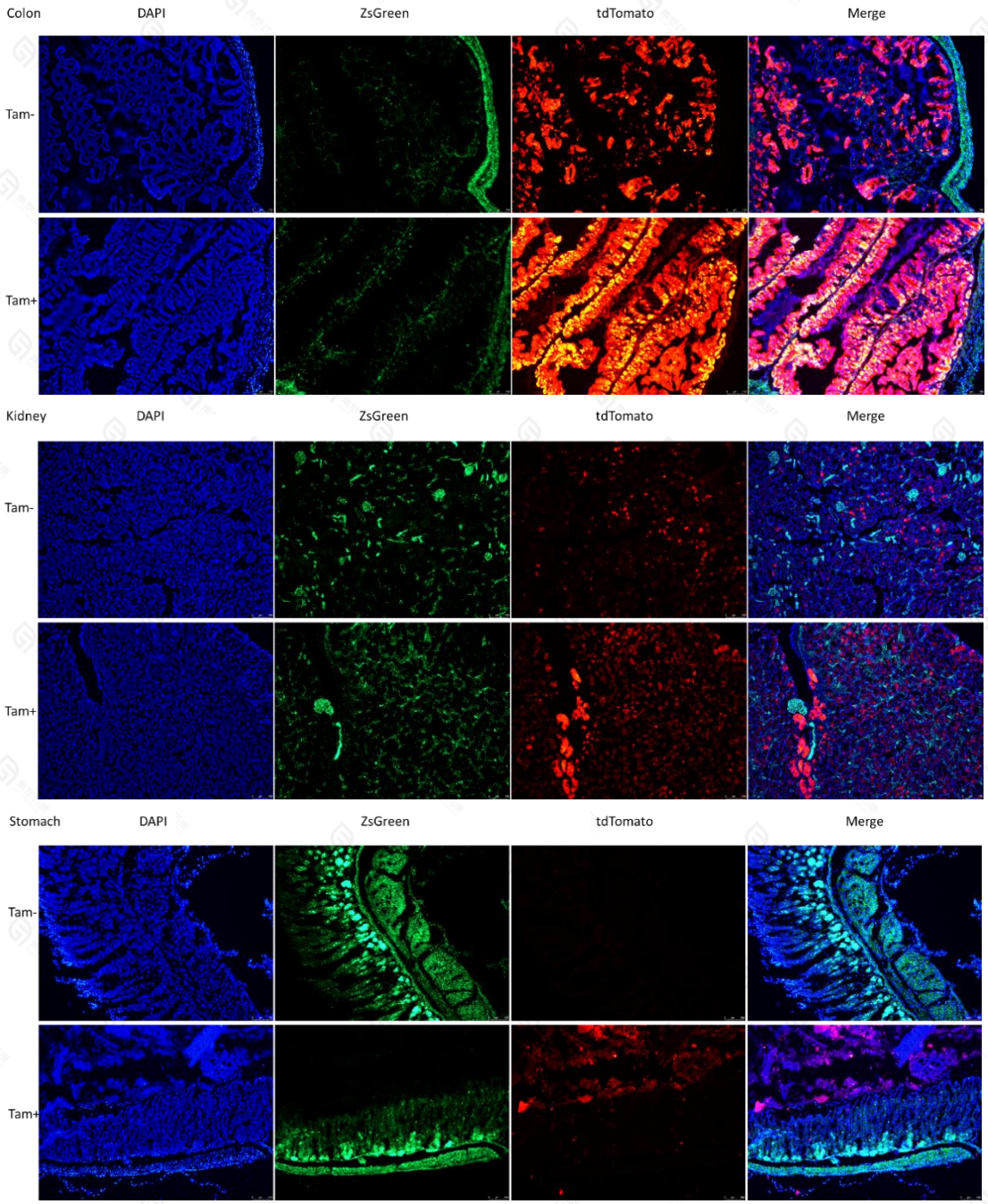
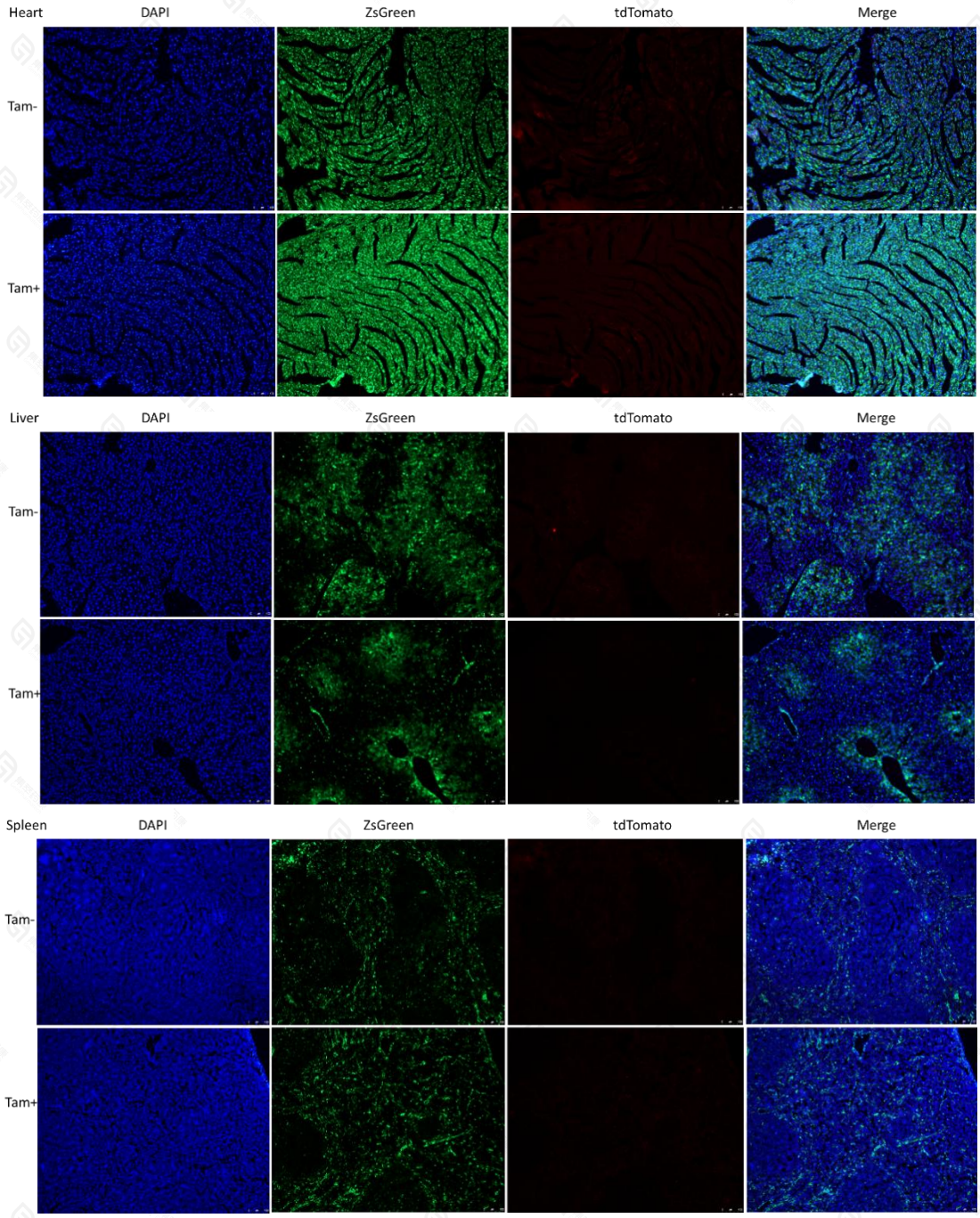


Fig 3. Fluorescence imaging of tissues and organs with obvious Cre activity.
Organ name was indicated in the left top of each subfigure group. Tam-: H11-Vil1-CreERT2, CAG-G/R double positive individuals without tamoxifen administration; Tam+: H11-Vil1-CreERT2, CAG-G/R double positive individuals with tamoxifen administration.

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


Heart
DAPI
ZsGreen
tdTomato
Merge
Tam-
Tam+
Liver
DAPI
ZsGreen
tdTomato
Merge
Tam-
Tam+
Spleen
DAPI
ZsGreen
tdTomato
Merge
Tam-
Tam+

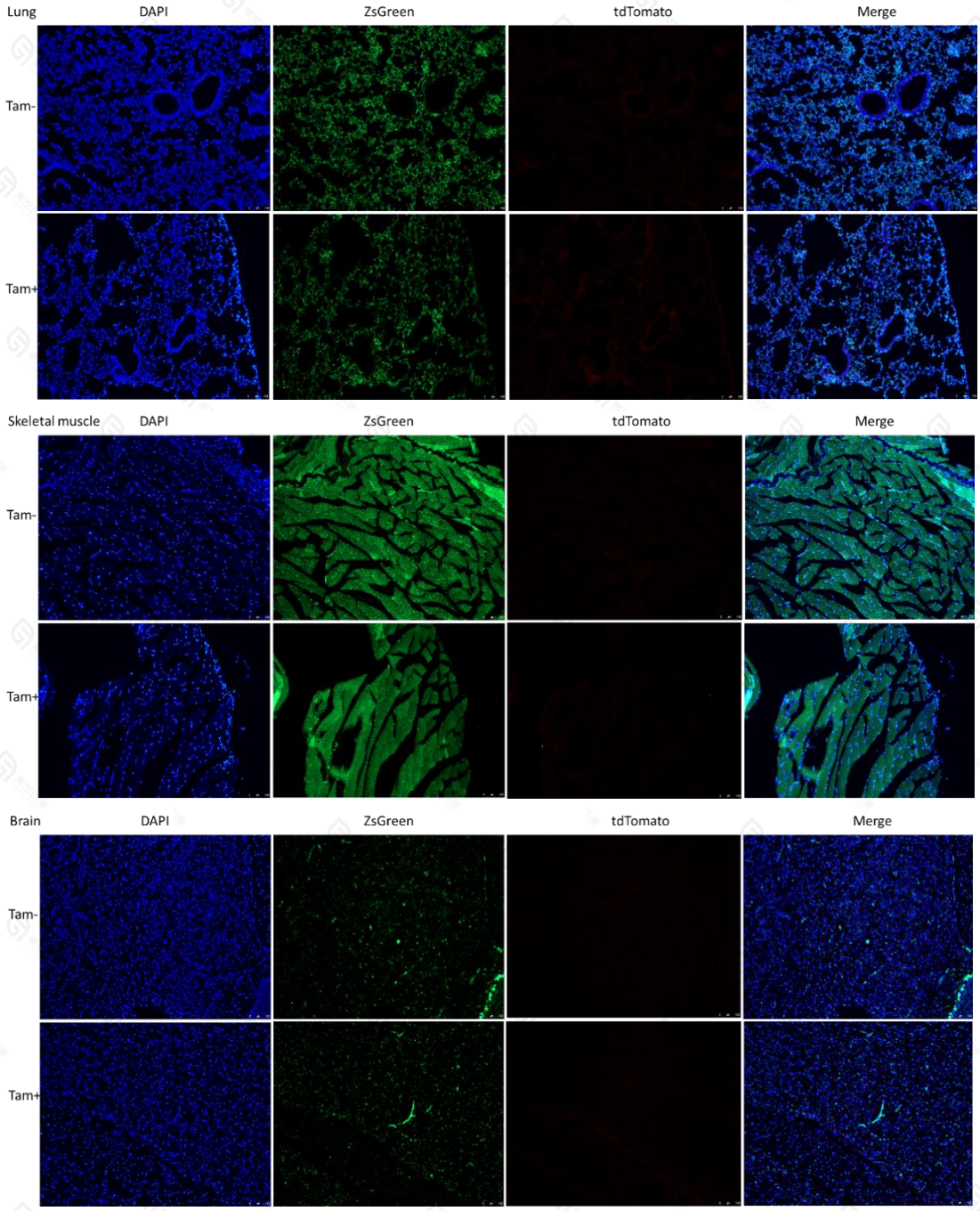


Fig 4. Fluorescence imaging of tissues and organs with little or no Cre activity.

Organ name was indicated in the left top of each subfigure group. Tam-: H11-Vil1-CreERT2, CAG-G/R double positive individuals without tamoxifen administration; Tam+: H11-Vil1-CreERT2, 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.El Marjou F, Janssen K P, Hung-Junn Chang B, et al. Tissue-specific and inducible Cre-mediated recombination in the gut epithelium. Genesis, 2004, 39(3): 186-193.