

C57BL/6JGpt-Tg(Prox1-CreERT2)

Strain Name: C57BL/6JGpt-Tg(Prox1-CreERT2-polyA)29/Gpt

Strain Type: Transgene

Strain Number: T010829

Background: C57BL/6JGpt

Description

This mouse strain expresses CreERT2 inducible recombinase ^[1] under the control of the mouse *Prox1* promoter, the construct was inserted into mice genome via transgene 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 lymphatic endothelial cells, liver and heart after tamoxifen administration. Recombinase activity after tamoxifen induction was also detected in a proportion of cells in spleen, eye, stomach, intestine and skeletal muscle. Note: mild CreER leaky activity was also observed in some cells in liver, heart, spleen and skeletal muscle without tamoxifen treatment.

Strategy

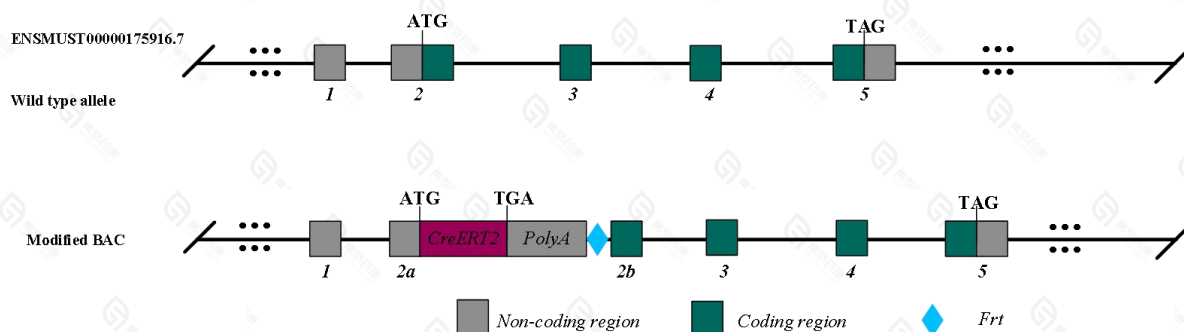


Fig.1 Schematic diagram of C57BL/6JGpt-Tg(Prox1-CreERT2) model strategy.

Applications

1. Cre tool mice for specific, tamoxifen dependent induction of loxP recombination in lymphatic endothelial cells ^[2].

Data support

1. Validation methods & notes

Tg(Prox1-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 P48 to P54 (6.9 w~7.7 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

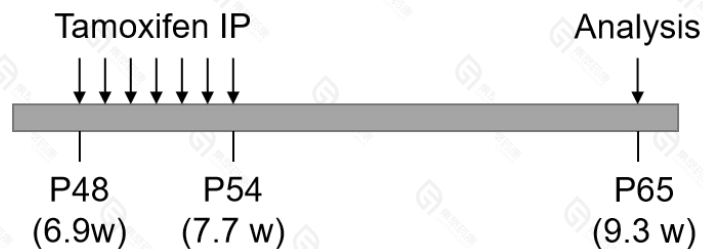
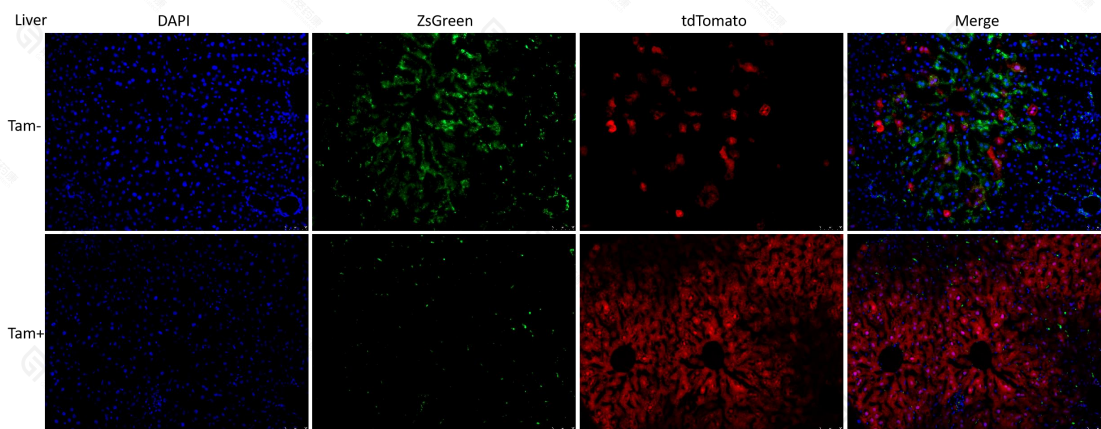
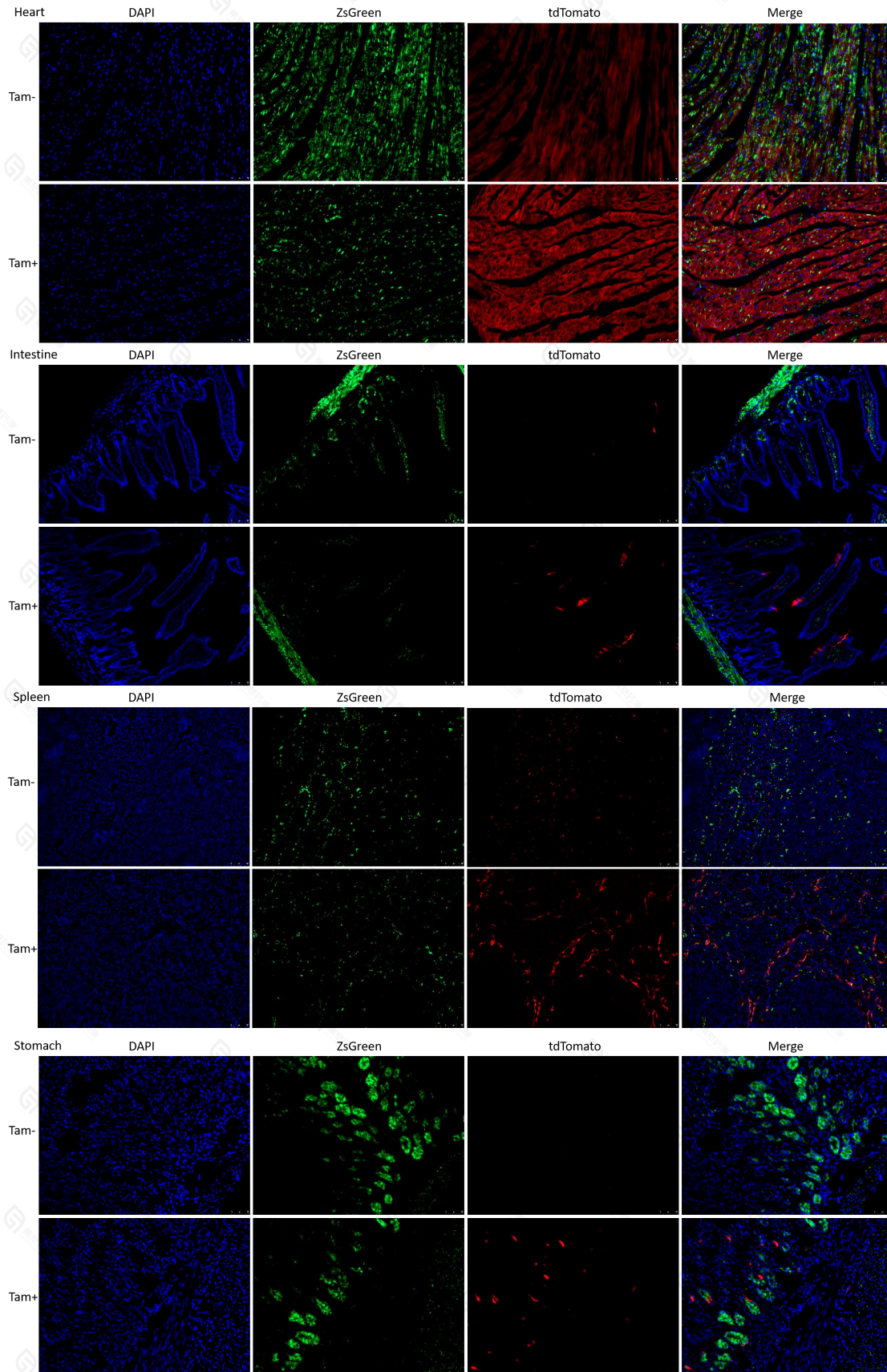


Fig 2. Timeline of tamoxifen treatment and experiment analysis of Tg(Prox1-CreERT2) mice.

3. Images of tissues and organs with obvious Cre activity





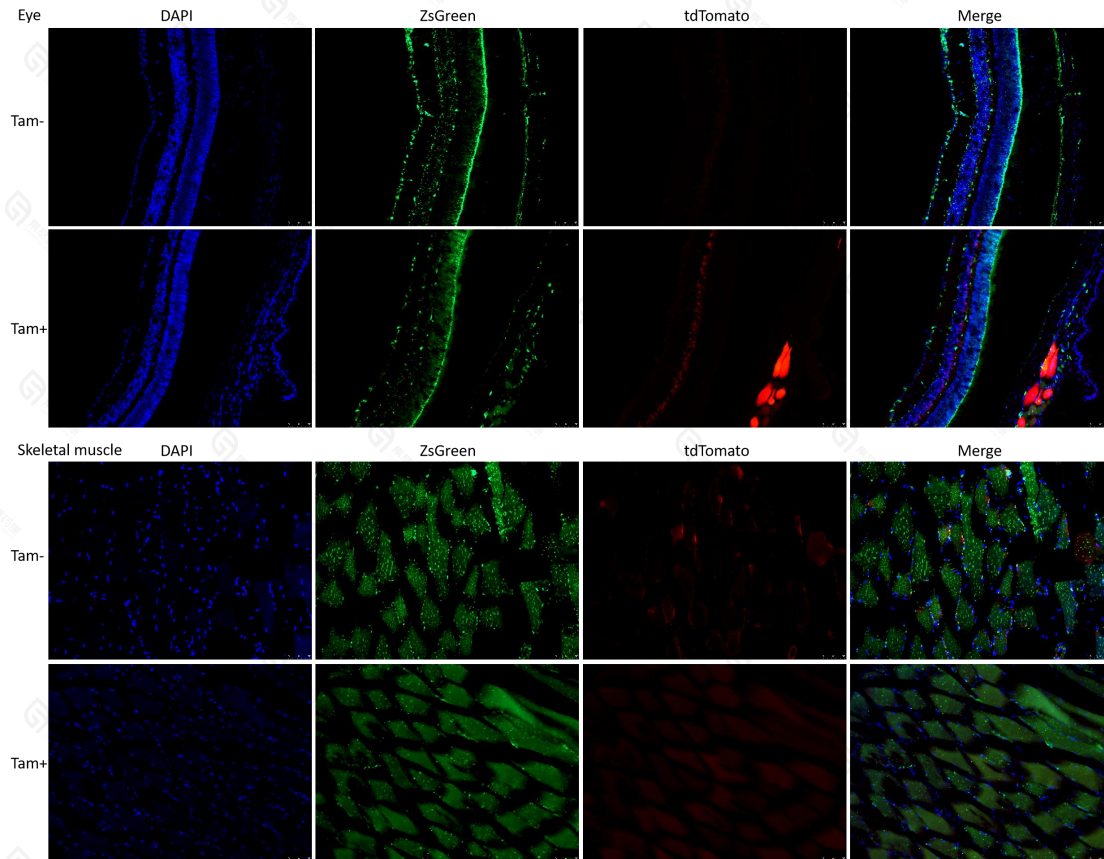


Fig 3. Fluorescence imaging of tissues and organs with obvious Cre activity.

Organ name was indicated in the left top of each subfigure group. Tam-: Tg(Prox1-CreERT2), CAG-G/R double positive individuals without tamoxifen administration; Tam+: Tg(Prox1-CreERT2), CAG-G/R double positive individuals with tamoxifen administration.

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

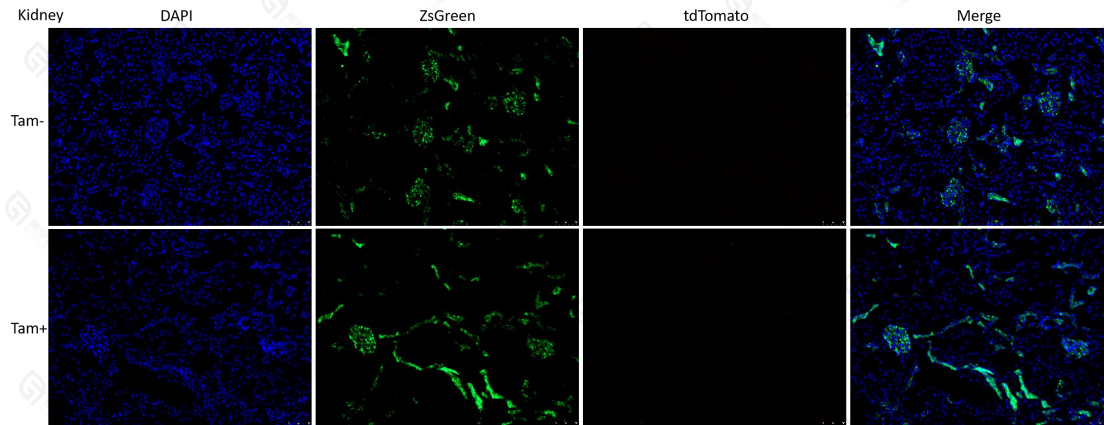


Fig 4. Fluorescence imaging of tissues and organs with little or no Cre activity.

Organ name was indicated in the left top of each subfigure group. Tam-: Tg(Prox1-CreERT2), CAG-G/R double positive individuals without tamoxifen administration; Tam+: Tg(Prox1-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. Srinivasan RS, Dillard ME, Lagutin OV, et al. Lineage tracing demonstrates the venous origin of the mammalian lymphatic vasculature. *Genes Dev*, 2007, 21(19): 2422-32.