

## C57BL/6JGpt-Lgr5-CreERT2

**Strain Name:** C57BL/6JGpt-*Lgr5*<sup>em1Cin(CreERT2)</sup>/Gpt

**Strain Type:** Knock-in

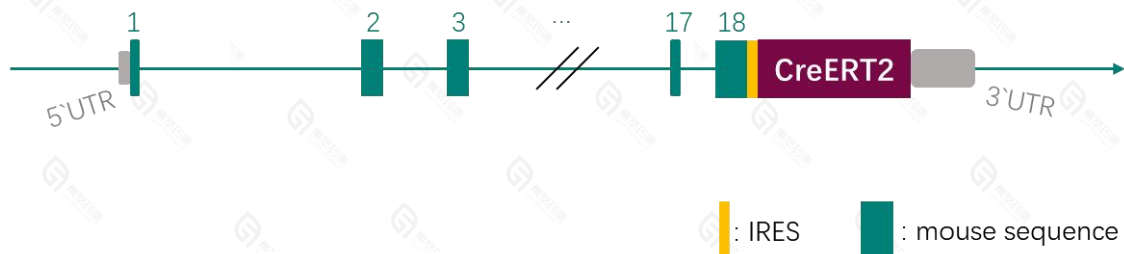
**Strain Number:** T003768

**Background:** C57BL/6JGpt

### Description

This mouse strain expresses CreERT2 inducible recombinase <sup>[1]</sup> under the control of the mouse endogenous *Lgr5* promoter, the construct was inserted into the C terminal of *Lgr5* 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 the *Lgr5*-expressing cells after tamoxifen administration. Note: variegated expression of *Lgr5* in intestine is advantageous for performing clonal lineage tracing and sorting intestinal stem cells, but may have limitations for more quantitative studies such as *Lgr5*-Cre driven knockout strategies.

### Strategy



**Fig.1 Schematic diagram of C57BL/6JGpt-Lgr5-CreERT2 model strategy.**

### Applications

1. Cre tool mice for specific, tamoxifen dependent induction of loxP recombination in intestinal stem cells <sup>[2]</sup>. These mice may be useful for lineage-tracing or marking *Lgr5*-expressing stem cells of the small intestine.

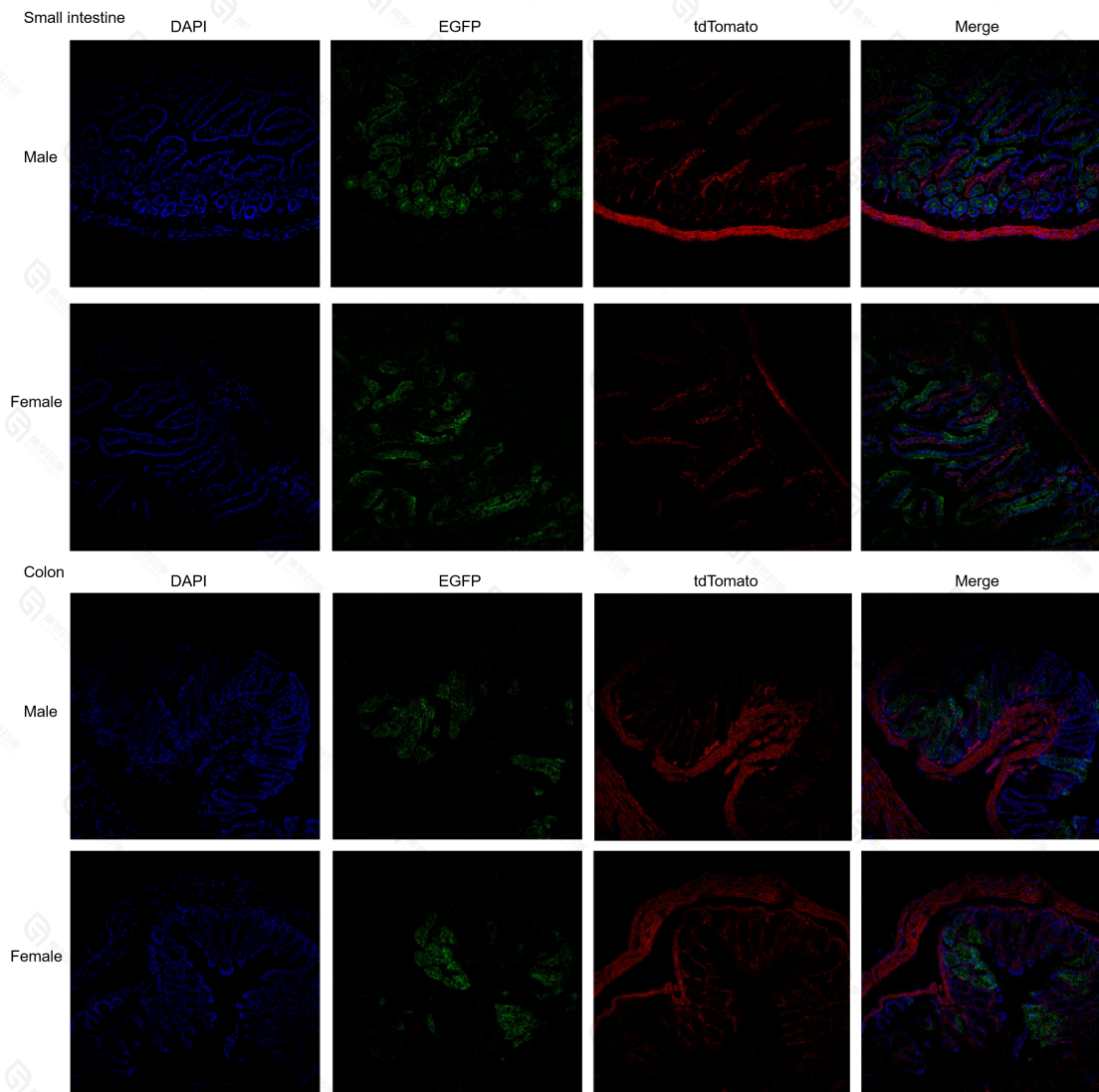
### Data support

#### 1. Validation methods & notes

*Lgr5*-CreERT2 mice was crossed with Rosa26-loxp-tdTomato-loxp-GFP mice with ubiquitous reporter expression, Cre-mediated recombination will lead to excision of

tdTomato and the stop cassette 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. For tamoxifen administration, 0.25 mL of 5 mg/mL tamoxifen was treated through intraperitoneal injection for one week. Note: these results may only represent the activity of CreERT2 in this strain under this certain tamoxifen treatment condition. Recombinase activity may be different at other stages or under different tamoxifen induction conditions in your application.

## 2. Images of tissues and organs with obvious Cre activity



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

Organ name was indicated in the left top of each subfigure group. Male/Female: Lgr5-CreERT2, Rosa26-loxp-tdTomato-loxp-GFP 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. Barker N, van Es JH, Kuipers J, et al. Identification of stem cells in small intestine and colon by marker gene Lgr5. *Nature*, 2007, 449(7165): 1003-7.