B6-p53 CKO

Stain Name： B6/JGpt-Trp53^{em1Cflox}/Gpt

Strain Type： Condition Knock-out

Strain Number： T005480

Background： C57BL/6JGpt

Description

The tumor suppressor *p53* exerts its biological function by regulate transcriptions of numerous genes downstreamed, involved in cell cycle arrest, apoptosis, DNA repair, senescence, and metabolism as a transcription factor[1,2]. P53 is also directly recruited to the mitochondria and induces apoptosis independent of its function as a transcription factor[3]. Under unstressed physiological conditions, P53 expression is maintained at a low level. Once cells are exposed to genotoxic stresses, *P53* is posttranslationally modified through phosphorylation and acetylation, becomes stabilized, and induces cell cycle arrest and/or cell death. *P53* act as a guardian of the genome. When *P53*'s activity is lost by gene deletion or mutations, normal cells lose the abilities to control their growth and death, leading to immortalization and ultimately cancer[4]. Over 50% of cancers patients were observed to have mutations in the *p53* gene.

GemPharmatech use gene editing technology to developed *p53* Condition Knock-out mouse on C57BL/6 background (B6-p53 *C*KO). B6-p53 CKO mice can delete p53 gene by crossed with tissue-specific Cre strain. This model can be used to study the occurrence and development of p53 gene-related cancers.

Strategy

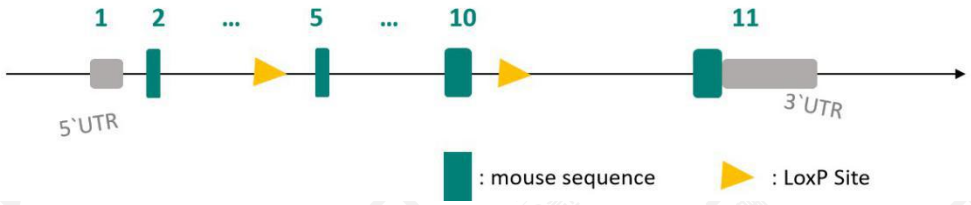

Fig.1 Schematic diagram of B6-p53 CKO model Strategy.

Application

1. Pancreatic cancer, colorectal cancer, breast cancer and non-small cell lung cancer study

2. Screen of small-molecule antitumor drugs

Data support

1. mRNA analysis of B6-p53 CKO mice after deletion of Flox

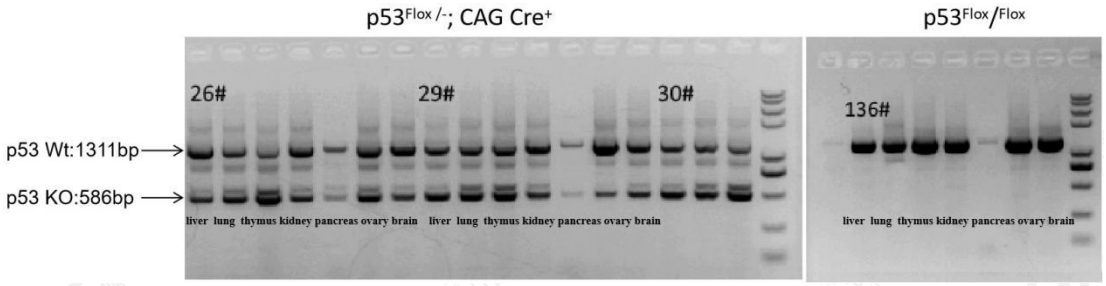

Fig2. Detection of mRNA expression in B6-p53 CKO mice. B6-p53 CKO mice were crossed with B6-CAG Cre mice.The Liver, lung, thymus, kidney, pancreas, ovary, brain of offspring mice ($p53^{Flox/-}$; CAG Cre^{+}) were extracted total mRNA for p53 expression analysis. The results show that the sequence between Flox of p53 gene in $p53^{Flox/-}$; CAG Cre^{+} mice can be deleted in the liver, lung, thymus, kidney, pancreas, ovary, and brain. (In mice, if E5-E10 of the p53 gene was deleted, there are two mRNAs of different lengths: p53 wild type and p53 KO, which are shown on the gel map as two bands; otherwise, only p53 wild type bands are present).

The results show that B6-p53 CKO mice can delete p53 gene by crossed with tissue-specific Cre strains. This model can be used to study the occurrence and development of p53 gene-related cancers.

References

1. Lane, David, and Arnold Levine. "p53 Research: the past thirty years and the next thirty years." *Cold Spring Harbor perspectives in biology* 2.12 (2010): a000893

2. Levav-Cohen, Yaara, et al. "The p53-Mdm2 loop: a critical juncture of stress response." *Mutant p53 and MDM2 in Cancer*. Springer, Dordrecht, 2014. 161-186.

3. Vaseva, Angelina V., and Ute M. Moll. "The mitochondrial p53 pathway." *Biochimica et Biophysica Acta (BBA)-Bioenergetics*1787.5 (2009): 414-420.

4. Muller, Patricia AJ, and Karen H. Vousden. "p53 mutations in cancer." *Nature cell biology* 15.1 (2013): 2.