B6-p53 KO

Stain Name： B6/JGpt-*Trp53*^{em1Cd}/Gpt

Strain Type： KO

Strain Number： T005332

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 KO mouse on C57BL/6 background (B6-p53 KO). A few of B6-p53-/- mice develop tumors at 3 months of age, Homozygous males mice are fertile, but homozygous females's obtained rate is low. B6-p53 KO can be use for the study of cancer research and drug development.

Strategy

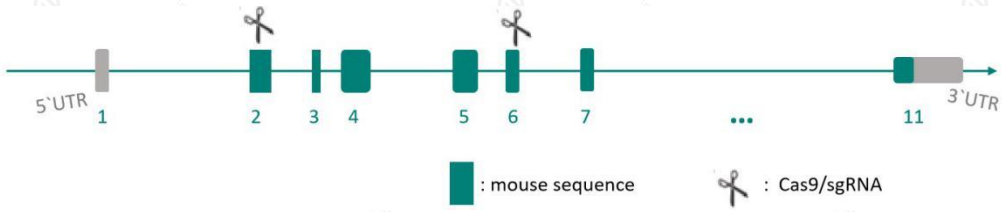

Fig.1 Schematic diagram of B6-p53 KO model Strategy.

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. Histopathology analysis of B6-p53 KO mice

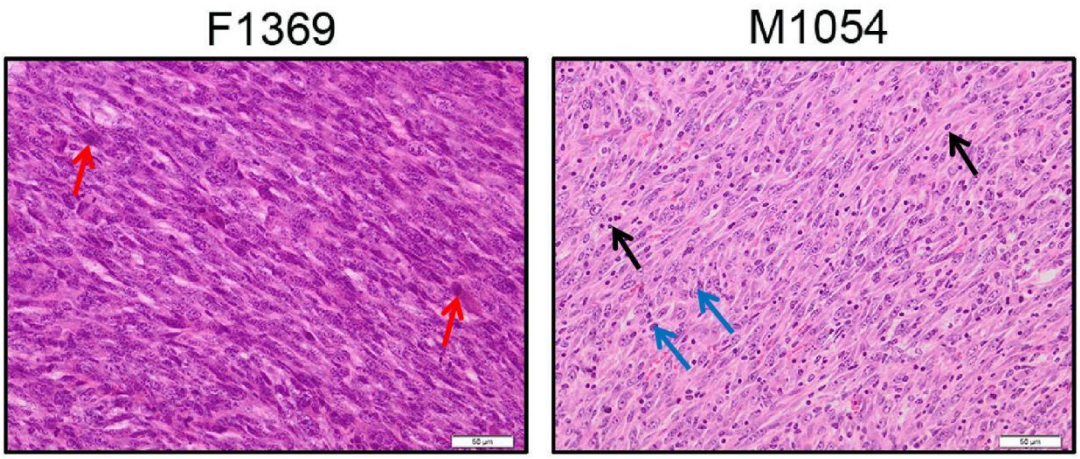

Fig2. Histopathology analysis of B6-p53 KO mice.

A few of B6-p53-/- mice develop tumors at three months of age. The tumorous tissue was examined by HE staining for pathology analysis. F1369(♀,3.2M), fibrosarcoma lesions, the tumor cells in different size and densely arranged in a fibrous, tumor giant cells were visible. M1054 (♂,4.8 M), skin-like sarcoma, the tumor cells are arranged in nodular and surrounded by collagen fibers around the nodules, the tumor cells are composed of polygonal cells and a small number of cells are fusiform, karyokinesis were visible, with inflammatory cell infiltration.(Fig2, 200x, bar=50μm. red arrow: tumor giant cells; black arrow: inflammatory cell infiltration, blue arrow: karyokinesis).

The results showed that： B6-p53 KO mice can be use for the study of cancer research and drug development .

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)-Bioenergetics1787.5 (2009): 414-420.

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