B6-CAG LSL hMYC

Stain Name：B6/JGpt-Rosa26$^{em1Cin(CAG-LSL-huMYC-polyA)}$/Gpt

Strain Type：Cas9 KI

Strain Number：T009879

Background：C57BL/6JGpt

Description

The proteins of the MYC family are key regulators of cell behavior. The Myc family consists of three related human genes: c-myc (MYC), l-myc (MYCL), and n-myc (MYCN)[1]. MYC, originally identified as an oncoprotein, affects growth, proliferation, differentiation, and apoptosis of cells through its ability to regulate a significant number of genes. In cancer, c-Myc is often constitutively (persistently) expressed. This leads to the increased expression of many genes, some of which are involved in cell proliferation, contributing to the formation of cancer[2-3].

B6-CAG LSL hMYC strain carried with human MYC gene which driven by a systemic promoter and had the floxed Stop sequences at the front of hMYC gene. Floxed Stop sequences will be deleted in the mouse genome when Cre recombinase exists, oncogenic MYC protein are expressed following removal of the stop cassette, which allows to control of the timing, location, and the multiplicity of tumor initiation. When B6-CAG LSL hMYC mice crossed with B6-Alb Cre mice (expressing Cre recombinase in liver and lung), the offspring mice (at 10 weeks age) were developed hepatobiliary cancer. B6-CAG LSL hMYC strain will be a good model for liver and ovarian cancer.

Strategy

Fig.1 Schematic diagram of B6-CAG LSL hMYC model stratery.

Application

1. Colorectal cancer, hepatobiliary cancer and lung cancer study
2. Screen of small-molecule antitumor drugs

Data support

1. After B6-CAG LSL hMYC mice removal of stop cassette were developed tumor

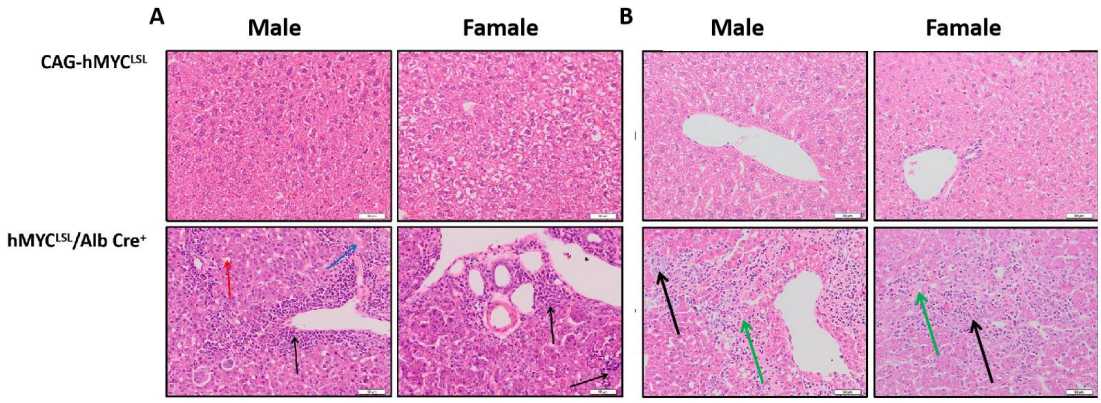

Fig.2 Histopathology analysis of B6-CAG LSL hMYC mice. Fig.2A, B: B6-CAG-LSL-hMYC mice crossed with B6-Alb Cre mice, the liver of offspring mice (B6-hMYC$^{LSL/+}$;Alb Cre^{+}) were examined at 9 weeks and 10 weeks age by HE staining for pathology analysis. **The results showed that:** Compared with control mice, at 9 weeks of age (Figure A), B6-hMYC$^{LSL/+}$;Alb Cre^{+} mice developed hepatitis, showing a large number of inflammatory cell infiltration, hepatocyte fat vacuolation, and multiple liver lobular inflammation sexual lesions, fibrous tissue hyperplasia. At 10 weeks of age (Figure B), B6-hMYC$^{LSL/+}$;Alb Cre^{+} mice were developed hepatobiliary cancer , cancer cells are nested, liver tissue is severely damaged, some liver cells are necrotic, a large number of fibrous tissues are proliferated, fibrous tissue spaces are formed, and a large number of inflammatory cells infiltrate And fat vacuoles (200X, bar = 50μm; black arrow: inflammatory cell infiltration; red arrow: hepatocellular fat vacuolization; green arrow: cancer cell; blue arrow: interstitial fibrosis).

Take togather： B6-CAG-LSL-hMYC are expressed MYC proteins following the removal of stop cassette and developed into tumors. B6-CAG-LSL-hMYC mice can be used to study the occurrence and development of cancer.

References

1. "Myc". NCBI.

2. Dominguez-Sola, David, et al. "Non-transcriptional control of DNA replication by c-Myc." *Nature* 448.7152 (2007): 445-451.

3. Vervoorts, Jörg, Juliane Lüscher-Firzlaff, and Bernhard Lüscher. "The ins and outs of MYC regulation by posttranslational mechanisms." *Journal of Biological Chemistry* 281.46 (2006): 34725-34729.