cyagen

C001215

Strain Datasheet

Release Time: July 03, 2026

Alox5 KO Mouse

Product ID: C001215

Common Name: Alox5 KO

Strain Name: C57BL/6JCya-*Alox5*^{em1}/Cya

Background: C57BL/6JCya

Strain Description

The Arachidonate 5-lipoxygenase (ALOX5) gene encodes 5-Lipoxygenase (5-LO), a key member of the fatty acid oxidase gene family. 5-LO is one of the crucial enzymes in the metabolic pathway of arachidonic acid (AA), an essential fatty acid in humans. It catalyzes the conversion of AA into leukotrienes (LTs), which are important mediators of various inflammatory and allergic diseases. ALOX5 is specifically expressed in bone marrow-derived cells and is significantly upregulated in myeloid leukemia stem cells, playing a pivotal role in the development of myeloid leukemia. Mutations in the promoter region of this gene weaken the response to leukotriene antagonists used for asthma treatment and are also associated with atherosclerosis and some cancers. Multiple splice variants encoding different isoforms have been identified for this gene.

This strain is a mouse Alox5 gene deletion model, achieved by using gene editing technology to knock out the homologous gene of human ALOX5 in mice. According to literature reports, these mice exhibit increased total adipose tissue weight, plasma VLDL/LDL cholesterol, and bone mineral density. Their spleens are typically smaller than those of wild-type mice, and they exhibit reduced inflammatory

responses and abnormalities in immunophysiology[1-3]. These homozygous Alox5 KO mice are viable and fertile.

Application Area

- Research on hematopoietic regulation,
- Pathological research on myeloid leukemia,
- Research on the mechanism of atherosclerosis,
- Research on the regulation of immune and inflammatory responses,
- Research on other hematological tumors.

Strain Strategy

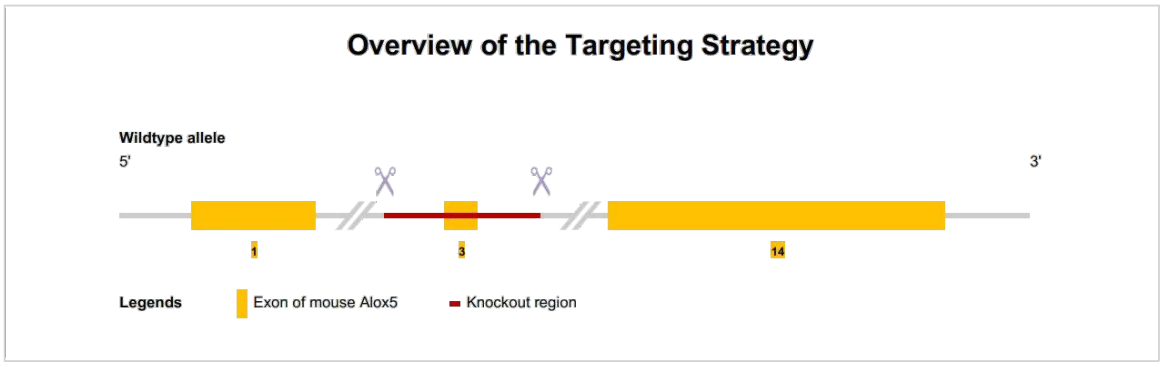


Figure 1. Diagram of the gene editing strategy for the generation of Alox5 KO mice. The Alox5 gene is located on chromosome 6 of the mouse. Using gene editing technology, Exon 3 of this gene has been knocked out.

Reference

[1]. Segal BH, Kuhns DB, Ding L, Gallin JI, Holland SM. Thioglycollate peritonitis in mice lacking C5, 5-lipoxygenase, or p47(phox): complement, leukotrienes, and reactive oxidants in acute inflammation. J Leukoc Biol. 2002 Mar;71(3):410-6.

[2]. Bailie MB, Standiford TJ, Laichalk LL, Coffey MJ, Strieter R, Peters-Golden M. Leukotriene-deficient mice manifest enhanced lethality from Klebsiella pneumonia in association with decreased alveolar macrophage phagocytic and bactericidal activities. J Immunol. 1996 Dec 15;157(12):5221-4.

[3]. Chen XS, Sheller JR, Johnson EN, Funk CD. Role of leukotrienes revealed by targeted disruption of the 5-lipoxygenase gene. Nature. 1994 Nov 10;372(6502):179-82. doi: 10.1038/372179a0.

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