B6-hCD36

Strain Name： B6/JGpt-CD36$^{em1Cin(hCD36)}$/Gpt
Strain Type： Knock-in
Strain Number： T056757
Background： C57BL/6JGpt

Description

CD36 is a secondary transmembrane glycoprotein with a molecular weight of approximately 88 kDa and belongs to the class B receptor family (SR-B2). It is known as a fatty acid transporter (FAT) and is also referred to as platelet GPIV and GP88[1,2]. CD36 forms two hydrophobic lumens in its pericyte region and binds to hydrophobic lipid-associated proteins, such as long chain fatty acids (LCFA) and oxidized phospholipids (oxPLs), to regulate cellular lipid metabolism[3]. CD36 has been shown to be expressed in various cell types including adipocytes, platelets, mononuclear macrophages, dendritic cells, hepatocytes, and tumor cells[4]. The expression level of CD36 varies among different cell types, and it performs diverse functions. CD36 protein has several post-translational modification sites, such as glycosylation, palmitoylation, ubiquitination, phosphorylation and acetylation, which are involved in the regulation of CD36 signaling function [5].

CD36, a key receptor for lipid transport, plays an essential role in the regulation of lipid metabolism in tumors. For example, the promotion of oral cancer or melanoma metastasis in mice by using palmitic acid diet involves the mediation of CD36 [6].CD36 also plays an important role in regulating tumor angiogenesis. The binding of TSP-1 to CD36 on microvascular endothelium inhibits angiogenesis [7], but CD36 could induce vascular mimicry (VM) formation in melanoma cells by promoting the adhesion of tumor cells [8]. CD36 is also a scavenger receptor that binds hydrophobic amyloid fibrils found in the Alzheimer's disease (AD) brain[9]. The CD36 receptor expressed on microglia interacts with fibrils of amyloid, inducing the release of proinflammatory cytokines and amyloid internalization. The interruption of the CD36-amyloid β interaction compromises the activation of microglial cells[10].

The B6-hCD36 strain was created at GemPharmatech using CRISPR/Cas9 technology, in which the sequence of murine Cd36 was replaced with the human CD36. Human CD36 is expressed in lung, heart and fat tissues of B6-hCD36 mice. The B6-hCD36 strain can be used in the study of neurodegenerative diseases, especially in the investigation of the pathogenesis of AD.

Strategy

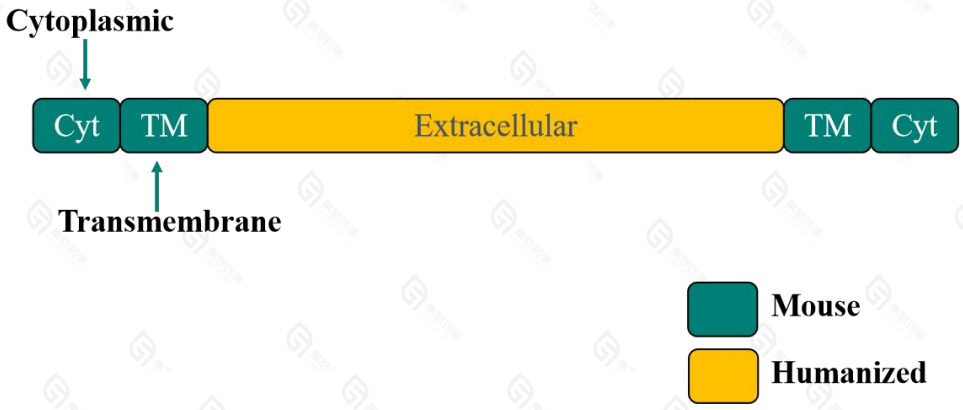

Fig.1 Schematic diagram of B6-hCD36 model strategy.

Applications

1. Study on the pathogenesis of CD36 in Alzheimer's disease
2. Research on the mechanism of CD36 in the tumor microenvironment

Data support

1. Detection of human hCD36 protein expression

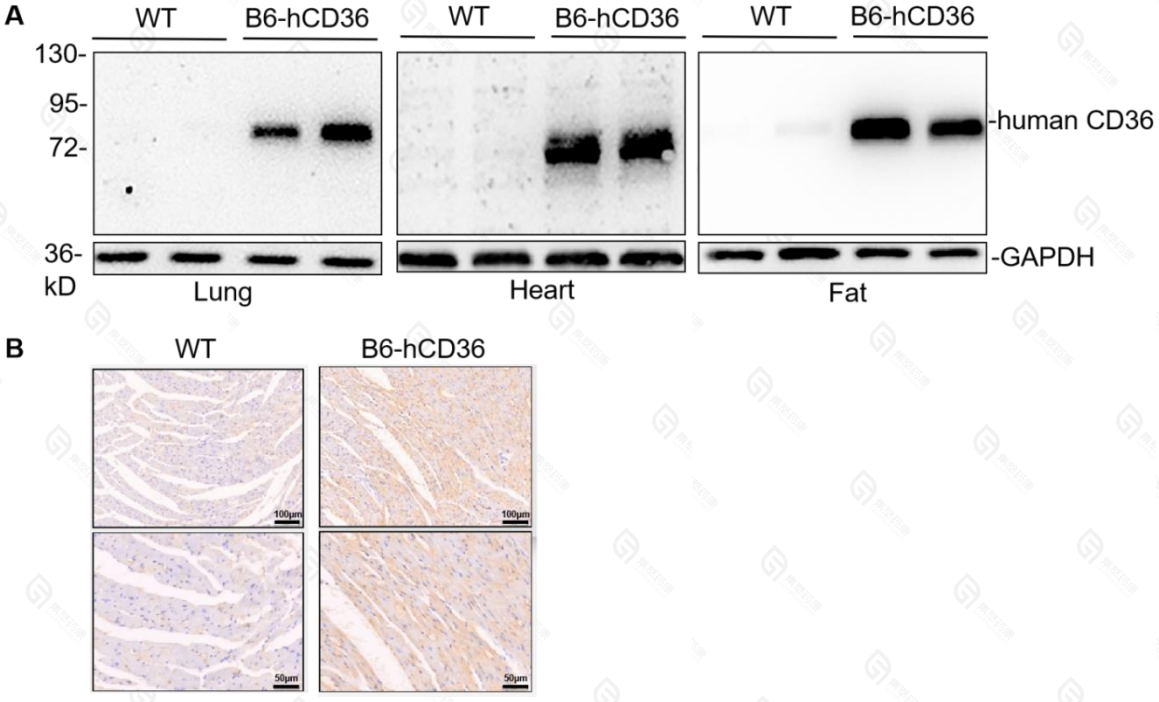

Fig. 2 Detection of hCD36 expression in B6-hCD36 mice

(A) The expression of human CD36 protein in lung, heart and fat of 8-week-old male wild type (WT) and B6-hCD36 mice (homozygote) were detected by western blot analysis, n=2. (B) The expression of human CD36 protein in the heart of 8-week-old male wild type (WT) and B6-hCD36 mice (homozygote)were detected by IHC, n=2.

Reference

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