B6-Dmd Del45

Strain Name： C57BL/6JGpt-*Dmd*^{em10Cd580}/Gpt
Strain type： Knock-out
Strain number： T056002
Background： C57BL/6JGpt

Description

Duchenne muscular dystrophy (DMD) is an X-linked recessive genetic disease. The disease is characterized by progressive atrophy of proximal skeletal muscles of the extremities, and pseudo hypertrophy of the calf gastrocnemius [1]. It also affects the myocarid and respiratory muscles, Which leads to early death[2]. This disease also affects the development of central nervous systems and organs. The DMD gene encodes a large rod-shaped cytoskeleton protein (dystrophin) Which mainly distributed on the inner surface of the bone and myocardial muscle fibers. Dystrophin helps muscle fibers maintain their integrity and elasticity during contraction and is also a vital component of the muscular dystrophin complex which plays an important role in maintaining the structure of cytoskeleton[3].

The main cause of DMD disease is the truncation of the dystrophin caused by DMD gene mutation or deletion, which lead to the functional loss of dystrophin. There are many types of DMD gene mutation or deletion, mainly in the region of exon 45-55. At present, there is no effective cure for the disease, and several gene therapies are in progress, among which exon skipping therapy has attracted more attention[4]. Based on the high-frequency deletion region of DMD gene in patients, GemPharmatech constructed a B6-*Dmd* Del45 mouse model of by deleting exon 45 of the mouse *Dmd* gene, which can be used for screening and optimizationof exon skipping gene therapy.

Strategy

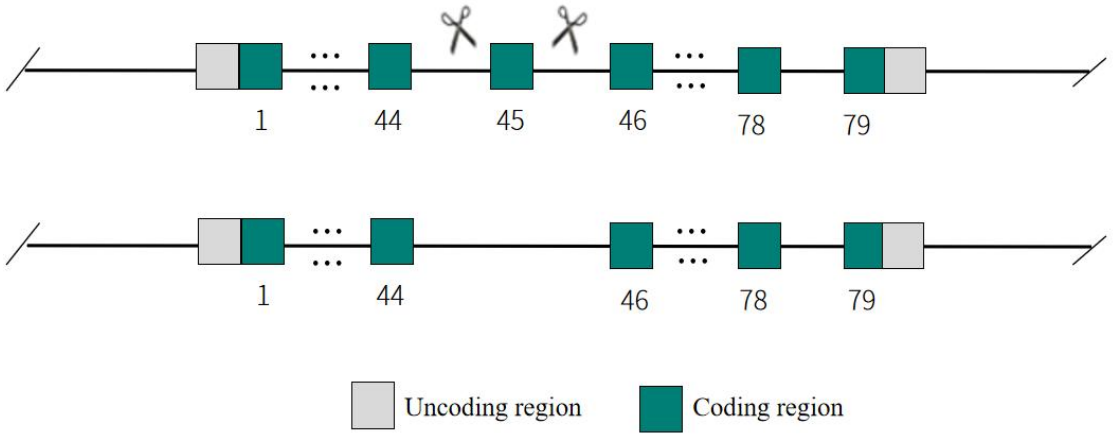

Fig 1. Schematic diagram of B6-*Dmd* Del45 model strategy

Application

1. Screening of drugs for muscular dystrophy
2. Pathophysiological study on muscular dystrophy

Data support

1. Validation of the B6-*Dmd* Del45 mouse model

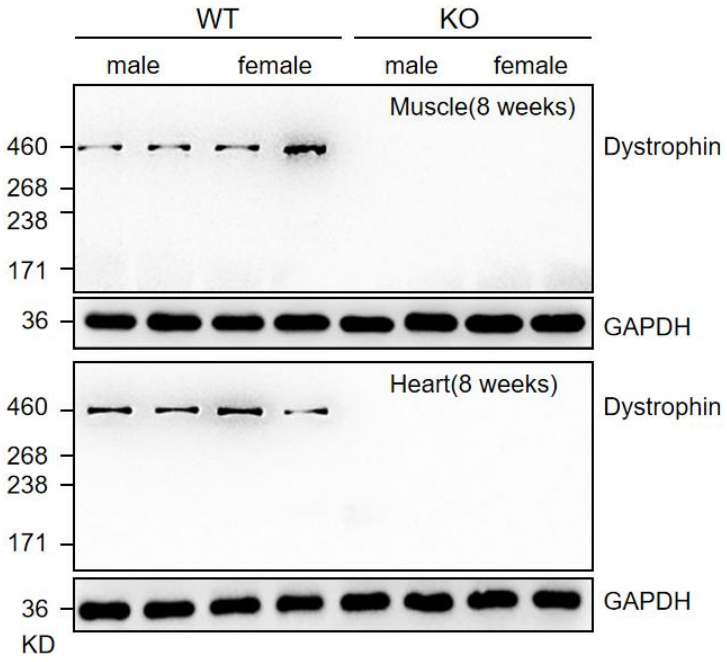

Figure 2. Loss of dystrophin protein expression in B6-*Dmd* Del45 mice

Anti-Dystrophin antibody (n=2) was used to detect the dystrophin protein expression in heart and muscle tissues of WT mice and B6-*Dmd* Del45 mice at the age of 8 weeks, respectively. As shown in Figure 2, B6-*Dmd* Del45 mice did not express DMD protein in the heart and muscle tissues.

Reference：

1. Sacco, Alessandra, et al. "Short telomeres and stem cell exhaustion model Duchenne muscular dystrophy in mdx/mTR mice." Cell 143.7 (2010): 1059-1071.
2. Mourkioti, Foteini, et al. "Role of telomere dysfunction in cardiac failure in Duchenne muscular dystrophy." Nature cell biology 15.8 (2013): 895-904.
3. Elangkovan, Nertiyan, and George Dickson. "Gene therapy for Duchenne muscular dystrophy." Journal of Neuromuscular Diseases 8.s2 (2021): S303-S316.
4. Sheikh, Omar, and Toshifumi Yokota. "Developing DMD therapeutics: a review of the effectiveness of small molecules, stop-codon readthrough, dystrophin gene replacement, and exon-skipping therapies." Expert opinion on investigational drugs 30.2 (2021): 167-176.