

***Emc7* Cas9-KO Strategy**

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Project Overview

Project Name

Emc7

Project type

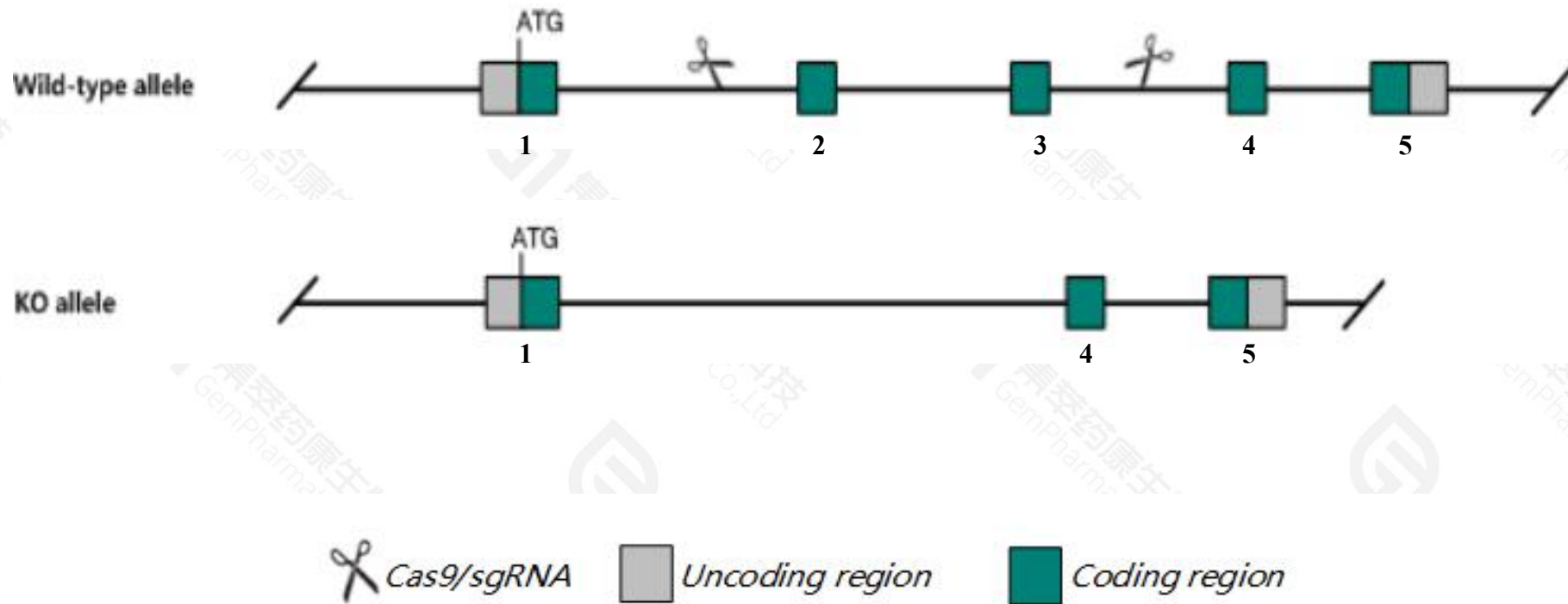
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Emc7* gene. The schematic diagram is as follows:



- The *Emc7* gene has 1 transcript. According to the structure of *Emc7* gene, exon2-exon3 of *Emc7*-201(ENSMUST00000069747.6) transcript is recommended as the knockout region. The region contains 259bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Emc7* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6JGpt mice. Fertilized eggs were transplanted to obtain positive F0 mice which were confirmed by PCR and sequencing. A stable F1 generation mouse model was obtained by mating positive F0 generation mice with C57BL/6JGpt mice.

- According to the existing MGI data, homozygous mice are not viable. Male heterozygous mice exhibited an increased anxiety-like response during stress-induced hyperthermia testing.
- The *Emc7* gene is located on the Chr2. If the knockout mice are crossed with other mice strains to obtain double gene positive homozygous mouse offspring, please avoid the two genes on the same chromosome.
- This strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risk of the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Emc7 ER membrane protein complex subunit 7 [Mus musculus (house mouse)]

Gene ID: 73024, updated on 13-Dec-2020

Summary



Official Symbol Emc7 provided by [MGI](#)

Official Full Name ER membrane protein complex subunit 7 provided by [MGI](#)

Primary source [MGI:MGI:1920274](#)

See related [Ensembl:ENSMUSG00000055943](#)

Gene type protein coding

RefSeq status PROVISIONAL

Organism [Mus musculus](#)

Lineage Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus

Also known as 2900064A13Rik, AI451465, ORF3, c11orf3

Expression Ubiquitous expression in cerebellum adult (RPKM 15.8), placenta adult (RPKM 15.4) and 28 other tissues [See more](#)

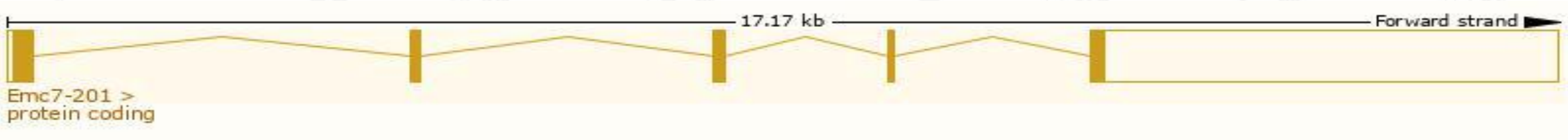
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Emc7-201	ENSMUST00000069747.6	5826	241aa	Protein coding	CCDS16555		TSL:1 , GENCODE basic , APPRIS P1 ,

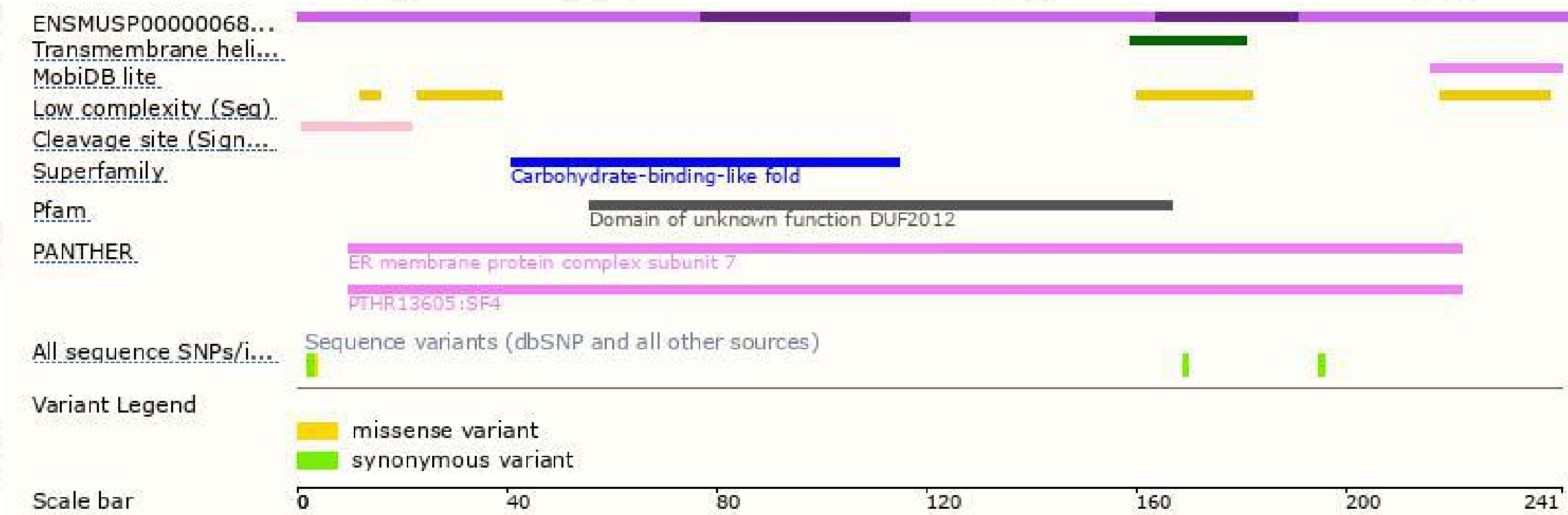
The strategy is based on the design of *Emc7-201* transcript, the transcription is shown below:



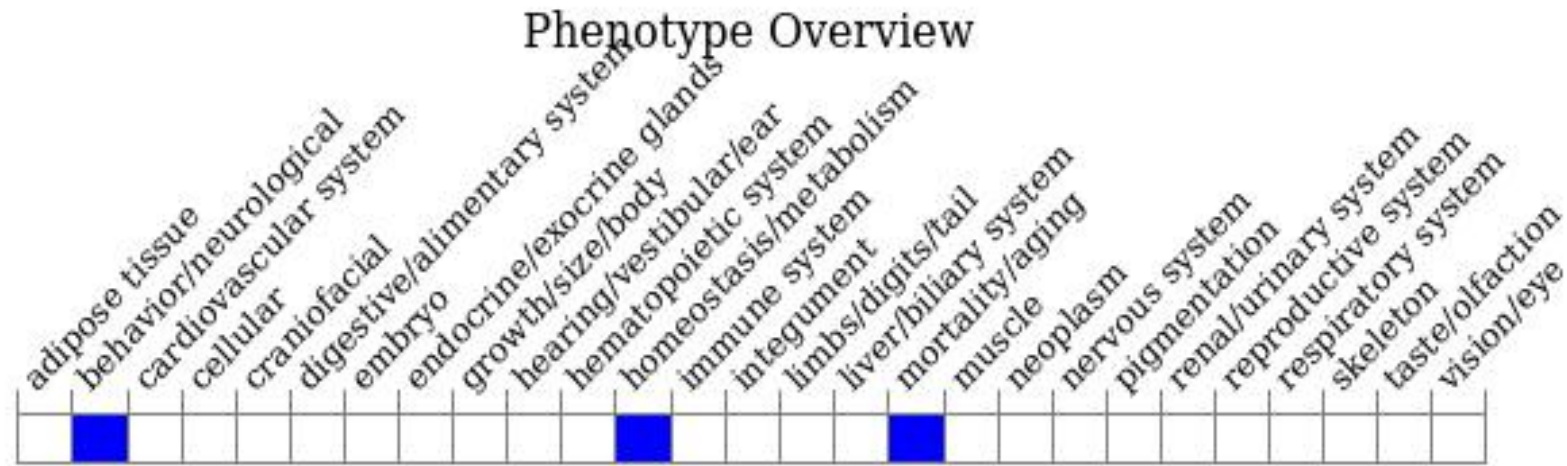
Genomic location distribution



Protein domain



Mouse phenotype description(MGI)



Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).

According to the existing MGI data, homozygous mice are not viable. Male heterozygous mice exhibited an increased anxiety-like response during stress-induced hyperthermia testing.

If you have any questions, you are welcome to inquire.

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