

***Mtmr3* Cas9-KO Strategy**

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Project Overview

Project Name

Mtmr3

Project type

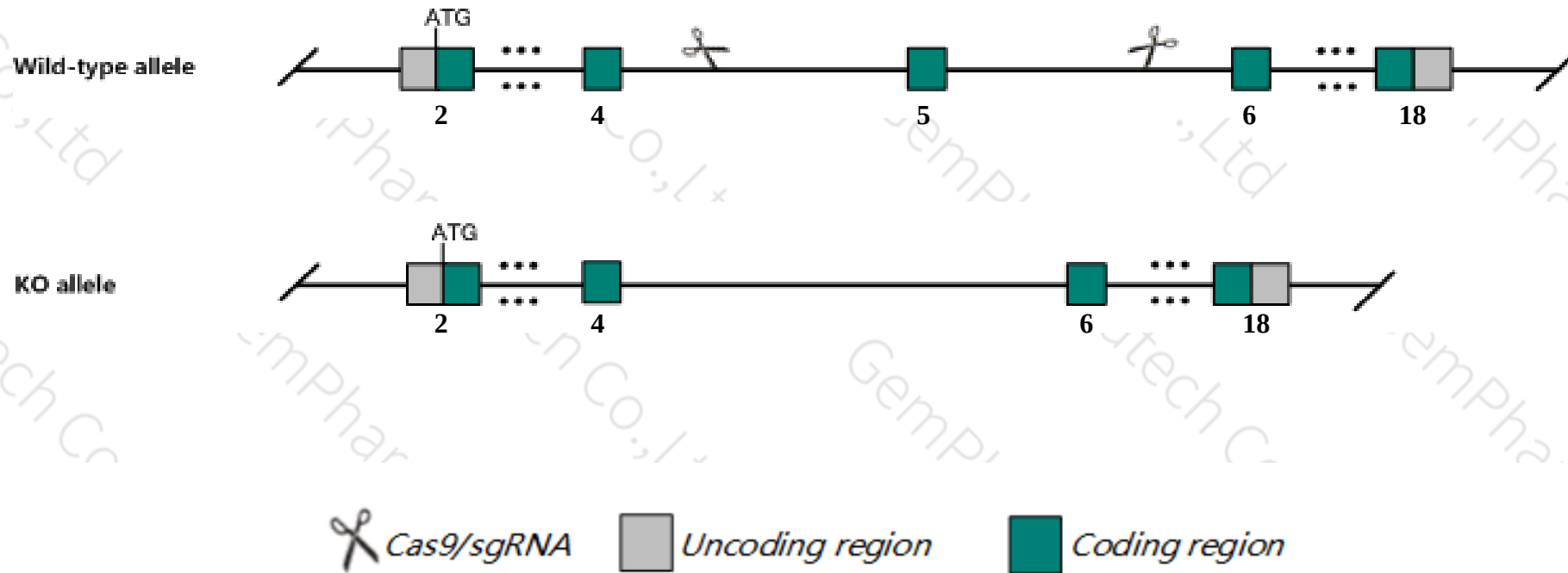
Cas9-KO

Strain background

C57BL/6J

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Mtmr3* gene. The schematic diagram is as follows:



- The *Mtmt3* gene has 7 transcripts. According to the structure of *Mtmt3* gene, exon5 of *Mtmt3-202* (ENSMUST00000109943.9) transcript is recommended as the knockout region. The region contains 83bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Mtmt3* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

- According to the existing MGI data, Homozygous mutation of this gene results in increased serum alkaline phosphatase level and, in males, impaired glucose tolerance.
- The *Mtmr3* gene is located on the Chr11. 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.

Gene information (NCBI)

Mtmr3 myotubularin related protein 3 [*Mus musculus* (house mouse)]

Gene ID: 74302, updated on 6-Sep-2019

Summary

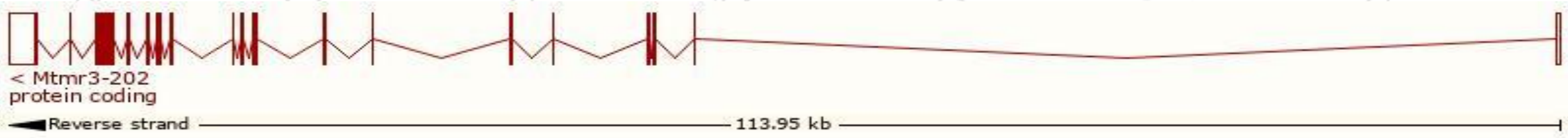
Official Symbol	Mtmr3 provided by MGI
Official Full Name	myotubularin related protein 3 provided by MGI
Primary source	MGI:MGI:1921552
See related	Ensembl:ENSMUSG00000034354
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	ZFYVE10; AI255150; AW557713; FYVE-DSP1; mKIAA0371; 1700092A20Rik
Expression	Ubiquitous expression in bladder adult (RPKM 14.9), thymus adult (RPKM 14.6) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

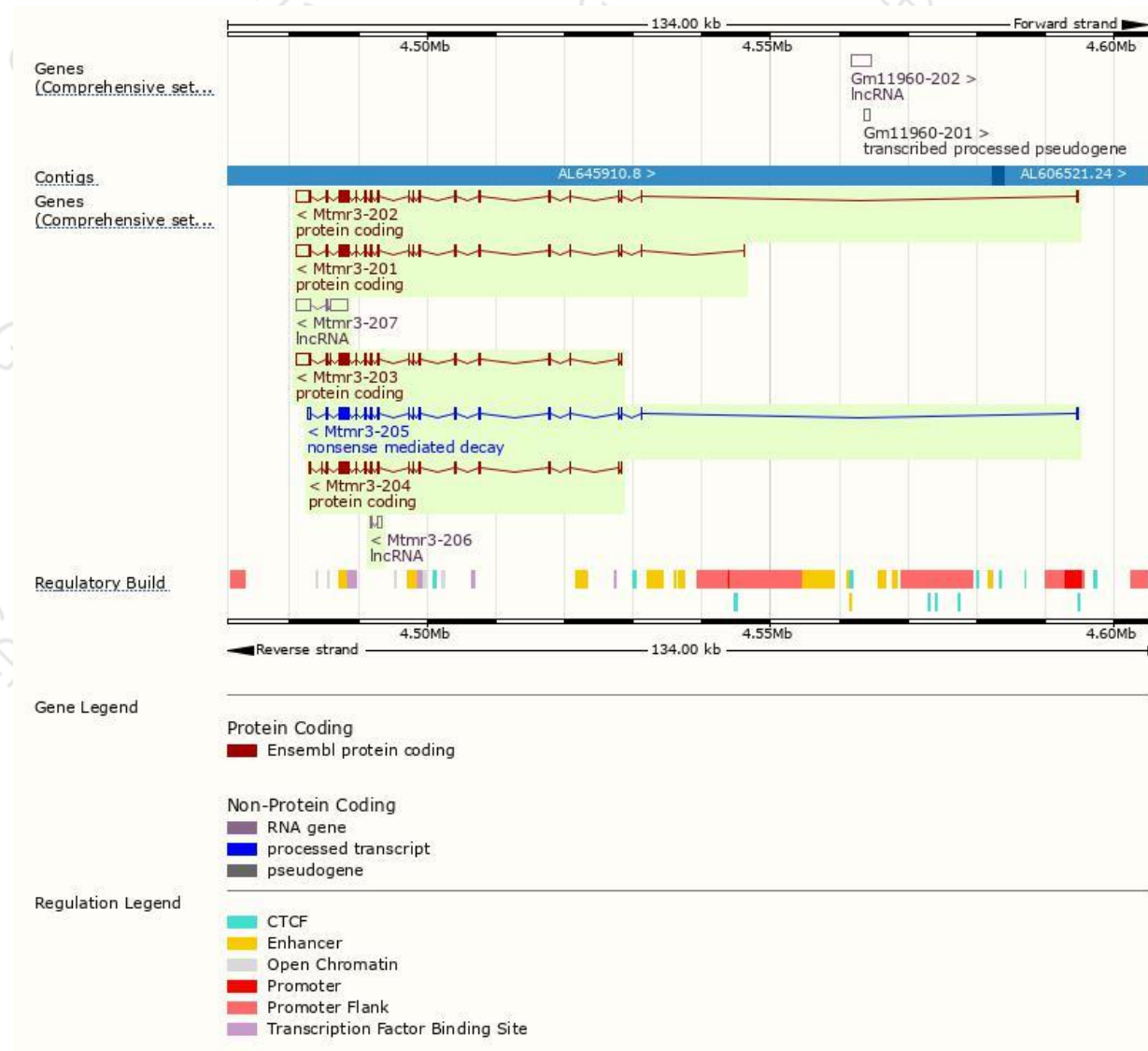
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Mtmr3-202	ENSMUST00000109943.9	5674	1159aa	Protein coding	CCDS48744	B1ATD5	TSL:1 GENCODE basic APPRIS P1
Mtmr3-201	ENSMUST00000040448.12	5534	1159aa	Protein coding	CCDS48744	B1ATD5	TSL:5 GENCODE basic APPRIS P1
Mtmr3-203	ENSMUST00000123506.7	5466	1195aa	Protein coding	-	R4GML8	CDS 5' incomplete TSL:5
Mtmr3-204	ENSMUST00000128256.1	3520	1167aa	Protein coding	-	B1ATD4	CDS 5' incomplete TSL:5
Mtmr3-205	ENSMUST00000130716.7	4040	1075aa	Nonsense mediated decay	-	M0QW74	TSL:1
Mtmr3-207	ENSMUST00000155566.7	4642	No protein	lncRNA	-	-	TSL:1
Mtmr3-206	ENSMUST00000144242.1	786	No protein	lncRNA	-	-	TSL:3

The strategy is based on the design of *Mtmr3-202* transcript,The transcription is shown below



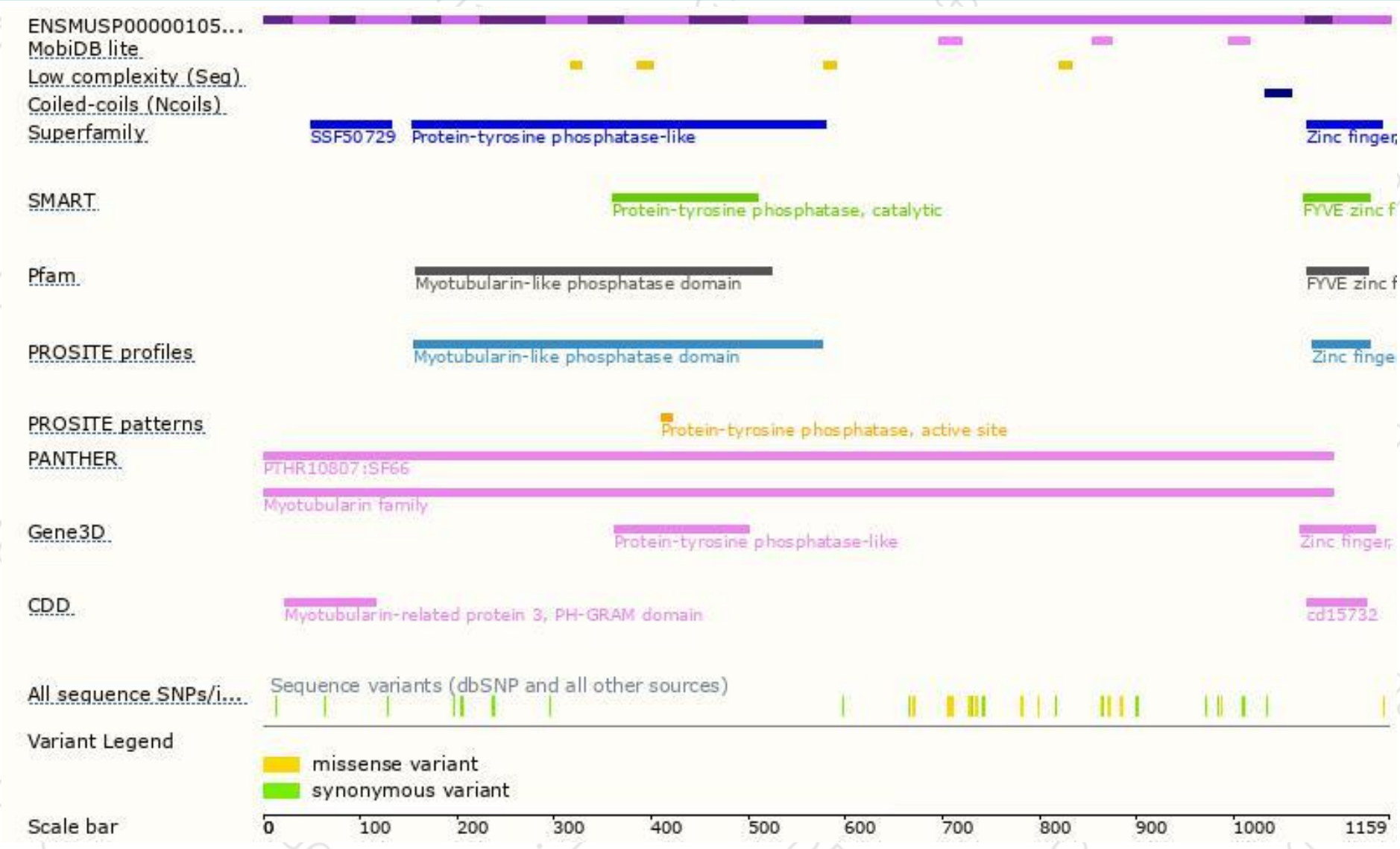
Genomic location distribution



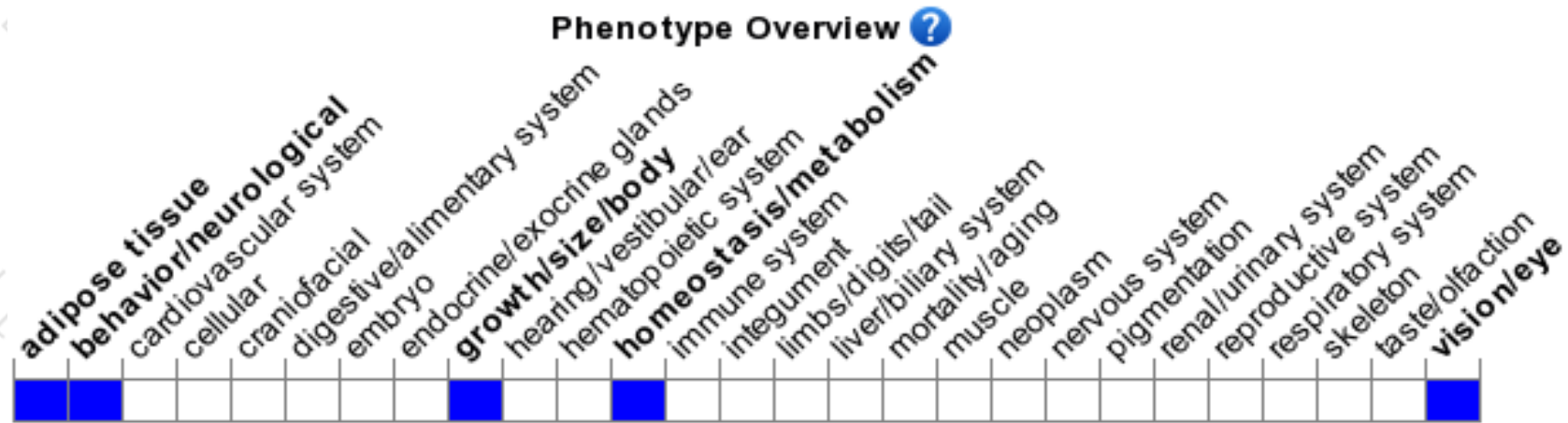
Protein domain



集萃药康
GemPharmatech



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 mutation of this gene results in increased serum alkaline phosphatase level and, in males, impaired glucose tolerance.

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

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