Trpc7 Cas9-KO Strategy

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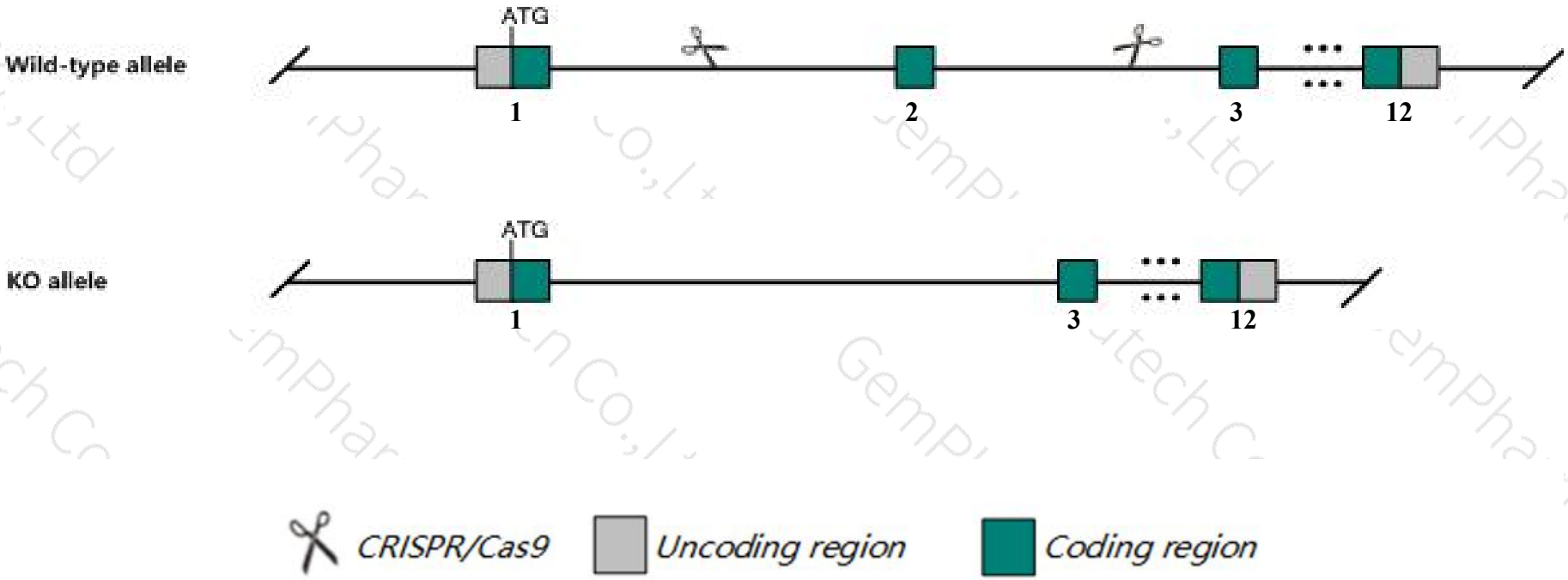
Project Overview

Project Name	***Trpc7***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Trpc7* gene. The schematic diagram is as follows:



Technical routes

➢ The *Trpc7* gene has 8 transcripts. According to the structure of *Trpc7* gene, exon2 of *Trpc7-201* (ENSMUST00000022023.12) transcript is recommended as the knockout region.The region contains 778bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Trpc7* gene. The brief process is as follows: CRISPR/Cas9 system w

Notice

➢ According to the existing MGI data,Mice homozygous for a knock-out allele exhibit abnormal eye physiology.

➢ The *Trpc7* gene is located on the Chr13. 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）

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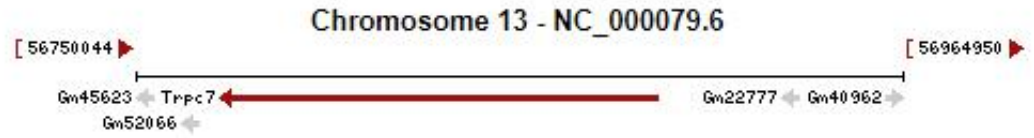
Trpc7 transient receptor potential cation channel, subfamily C, member 7 [*Mus musculus* (house mouse)]

Gene ID: 26946, updated on 14-Jan-2020

Summary

Official Symbol	Trpc7 provided by MGI
Official Full Name	transient receptor potential cation channel, subfamily C, member 7 provided by MGI
Primary source	MGI:MGI:1349470
See related	Ensembl:ENSMUSG00000021541
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	TRP7; Trrp8
Summary	The protein encoded by this gene is a member of the transient receptor potential channel family of proteins, which form six-transmembrane cation-permeable channels that are calcium permeant. Knock out mice are viable but display a reduction in the gamma wave activity that precedes seizure induction in response to a muscrarinic agonist, suggesting a functional role for this protein in initiation of seizures. Alternative splicing results in multiple transcript variants. [provided by RefSeq, Oct 2014]
Expression	Biased expression in CNS E18 (RPKM 2.1), frontal lobe adult (RPKM 1.3) and 6 other tissues See more
Orthologs	human all

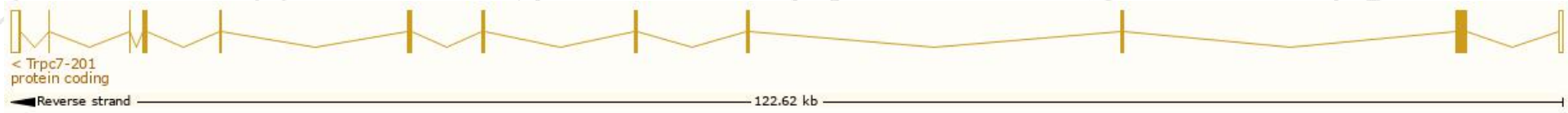


Transcript information（Ensembl）

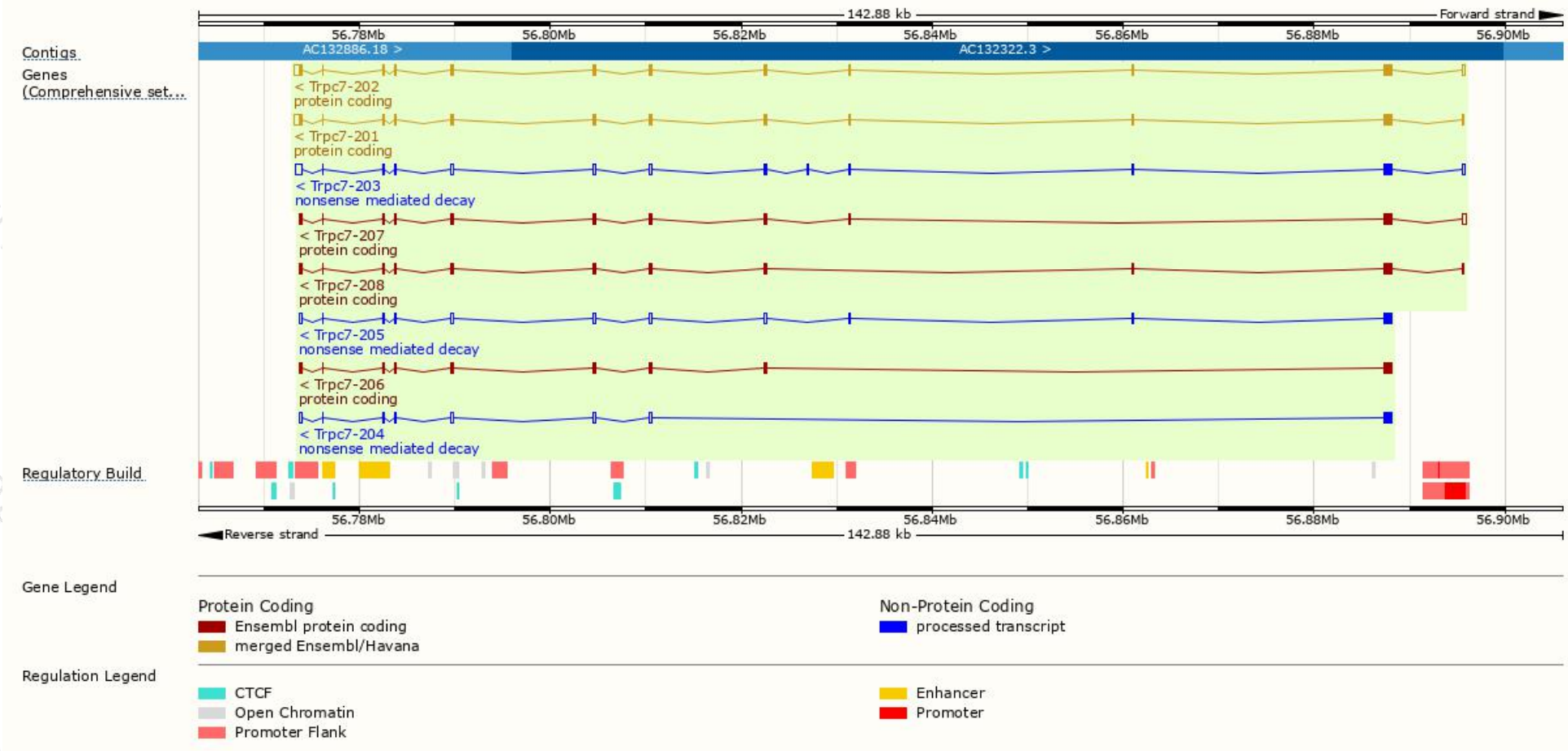
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Trpc7-202	ENSMUST00000109871.7	3519	861aa	Protein coding	CCDS79192	E9PVJ9	TSL:1 GENCODE basic APPRIS ALT1
Trpc7-201	ENSMUST00000022023.12	3483	862aa	Protein coding	CCDS26566	Q0VFY2 Q9WVC5	TSL:1 GENCODE basic APPRIS P3
Trpc7-207	ENSMUST00000173817.8	2905	801aa	Protein coding	-	G3UWT1	TSL:5 GENCODE basic
Trpc7-208	ENSMUST00000174457.8	2667	807aa	Protein coding	-	G3UWI6	TSL:5 GENCODE basic
Trpc7-206	ENSMUST00000173513.8	2239	746aa	Protein coding	-	G3UZW6	CDS 5' incomplete TSL:5
Trpc7-203	ENSMUST00000151918.7	3502	451aa	Nonsense mediated decay	-	D6RI84	TSL:1
Trpc7-205	ENSMUST00000173466.2	2603	380aa	Nonsense mediated decay	-	G3UYZ6	CDS 5' incomplete TSL:5
Trpc7-204	ENSMUST00000173067.8	2022	261aa	Nonsense mediated decay	-	G3UZF9	CDS 5' incomplete TSL:5

The strategy is based on the design of *Trpc7-201* transcript,The transcription is shown below

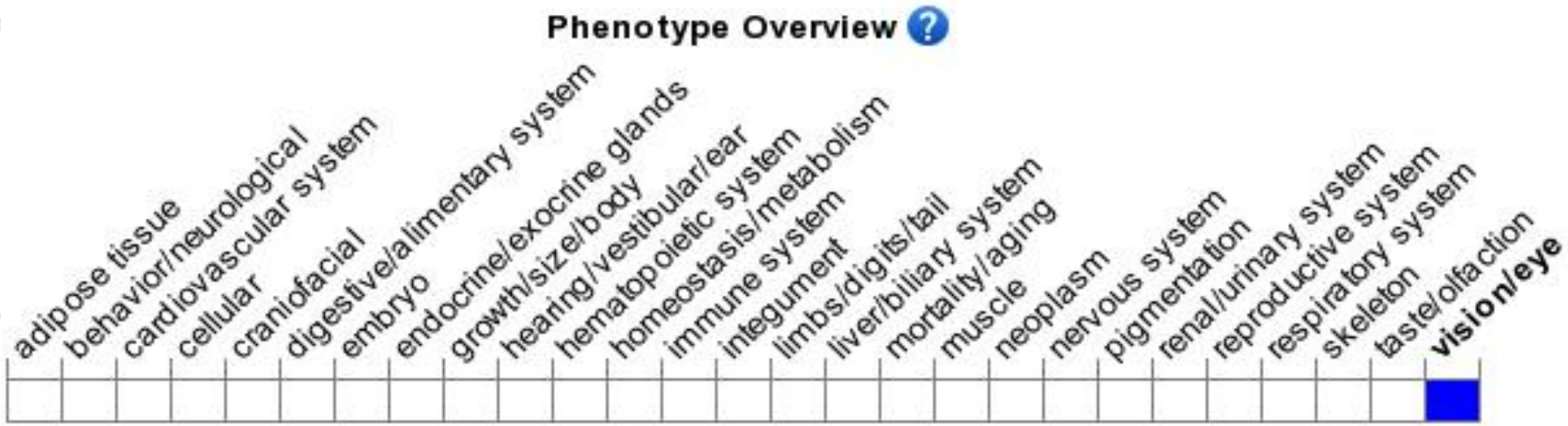


Genomic location distribution



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,Mice homozygous for a knock-out allele exhibit abnormal eye physiology.

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

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