

Tead1 Cas9-KO Strategy

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Project Overview

Project Name

Tead1

Project type

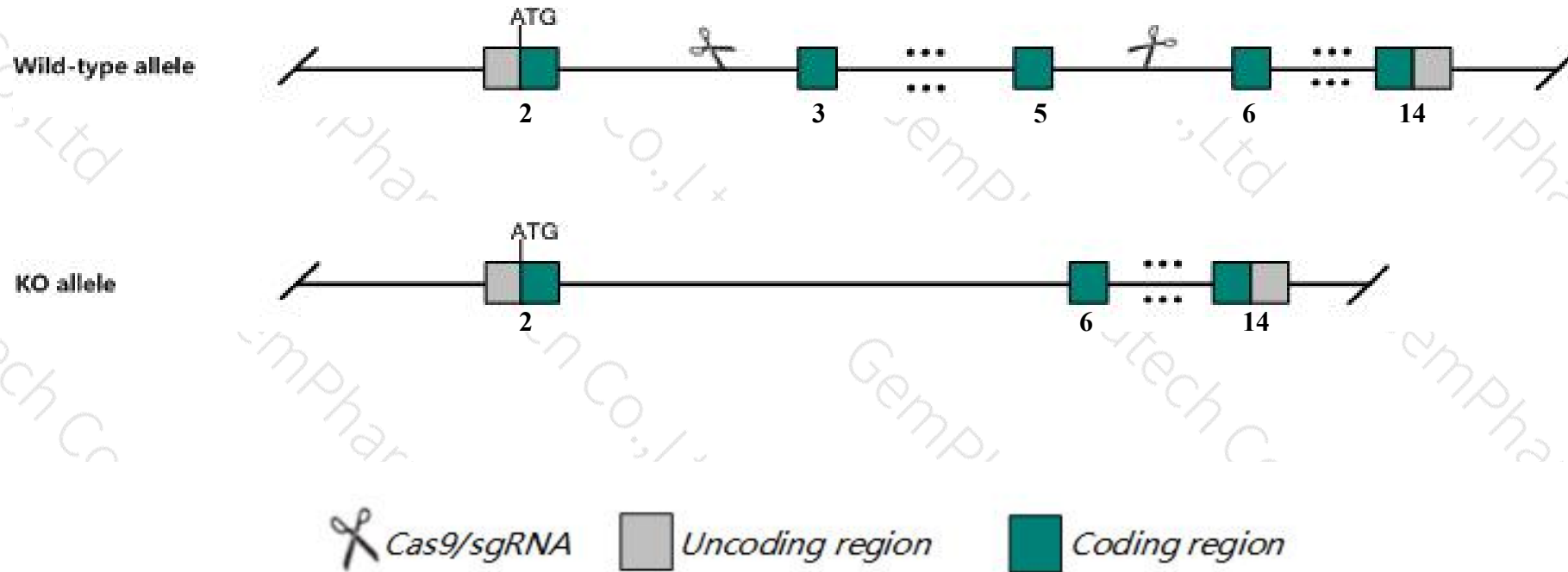
Cas9-KO

Strain background

C57BL/6J

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tead1* gene. The schematic diagram is as follows:



- The *Tead1* gene has 15 transcripts. According to the structure of *Tead1* gene, exon3-exon5 of *Tead1-201* (ENSMUST00000059768.16) transcript is recommended as the knockout region. The region contains 191bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Tead1* 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, Mice homozygous for disruptions in this gene die between embryonic day 11 and 12.5. Abnormalities were seen in heart development.
- The *Tead1* gene is located on the Chr7. 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)

Tead1 TEA domain family member 1 [Mus musculus (house mouse)]

Gene ID: 21676, updated on 5-Feb-2019

Summary

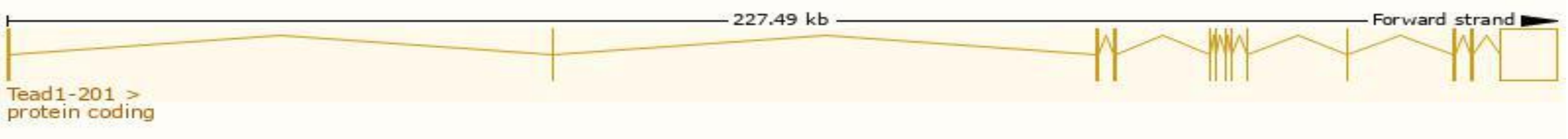
Official Symbol	Tead1 provided by MGI
Official Full Name	TEA domain family member 1 provided by MGI
Primary source	MGI:MGI:101876
See related	Ensembl:ENSMUSG00000055320
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2610024B07Rik, B230114H05Rik, Gtrgeo5, TEAD-1, TEF-1, Tcf13, mTEF-1
Expression	Broad expression in bladder adult (RPKM 16.6), heart adult (RPKM 14.4) and 24 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

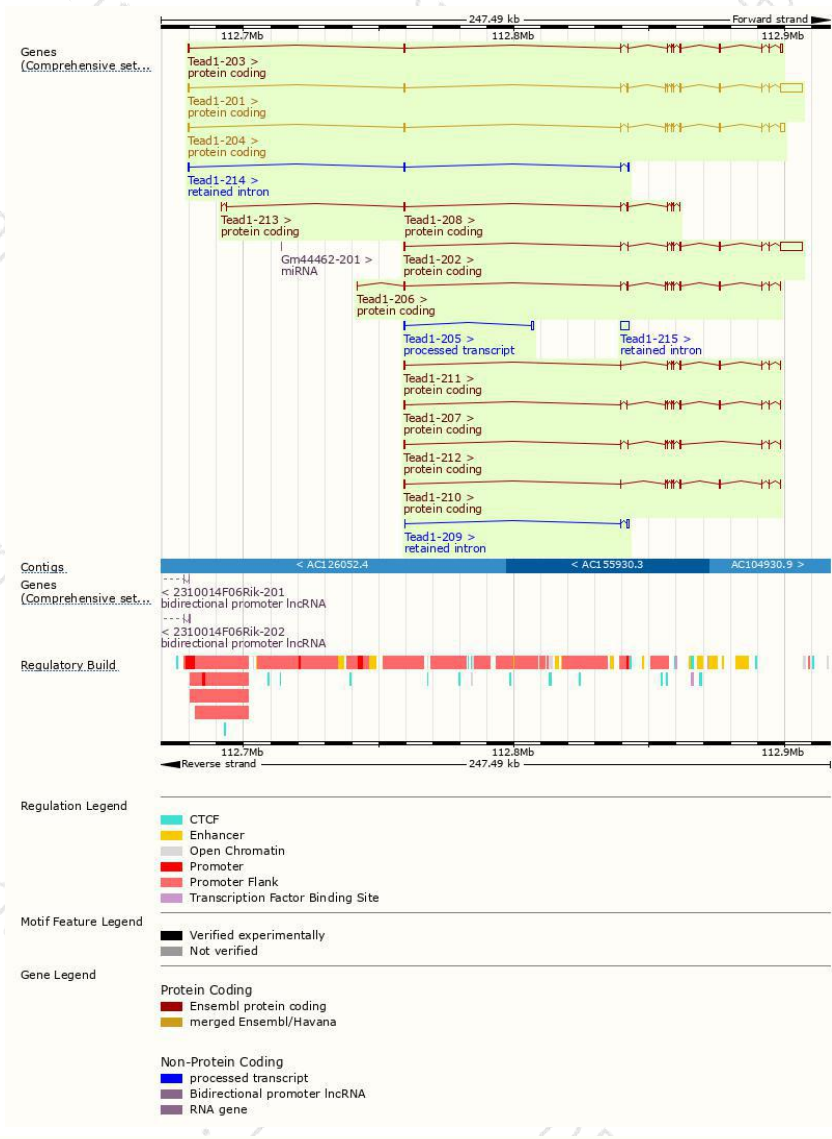
The gene has 15 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tead1-201	ENSMUST00000059768.16	9964	436aa	Protein coding	CCDS52365	Q3USK5	TSL:1 GENCODE basic APPRIS P4
Tead1-202	ENSMUST00000069256.11	9480	411aa	Protein coding	CCDS52367	Q6PAQ8	TSL:1 GENCODE basic APPRIS ALT 1
Tead1-204	ENSMUST00000106638.8	3047	415aa	Protein coding	CCDS52366	Q3UFP5	TSL:1 GENCODE basic APPRIS ALT 1
Tead1-203	ENSMUST00000084705.11	2543	411aa	Protein coding	CCDS52367	Q6PAQ8	TSL:1 GENCODE basic APPRIS ALT 1
Tead1-206	ENSMUST00000164363.7	1495	436aa	Protein coding	CCDS52365	Q3USK5	TSL:5 GENCODE basic APPRIS P4
Tead1-207	ENSMUST00000165036.7	1248	415aa	Protein coding	-	E9PZ73	TSL:5 GENCODE basic
Tead1-211	ENSMUST00000170352.7	1218	390aa	Protein coding	-	E9Q387	TSL:5 GENCODE basic
Tead1-210	ENSMUST00000168981.7	1185	394aa	Protein coding	-	E9PVS2	TSL:5 GENCODE basic
Tead1-212	ENSMUST00000171197.7	1074	357aa	Protein coding	-	E9QAK6	TSL:5 GENCODE basic
Tead1-208	ENSMUST00000167060.1	556	186aa	Protein coding	-	F6QH05	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:5
Tead1-213	ENSMUST00000171373.1	546	15aa	Protein coding	-	E9PVJ5	CDS 3' incomplete TSL:2
Tead1-205	ENSMUST00000163593.1	657	No protein	Processed transcript	-	-	TSL:3
Tead1-215	ENSMUST00000210510.1	2841	No protein	Retained intron	-	-	TSL:NA
Tead1-214	ENSMUST00000172065.7	894	No protein	Retained intron	-	-	TSL:3
Tead1-209	ENSMUST00000168328.1	646	No protein	Retained intron	-	-	TSL:3

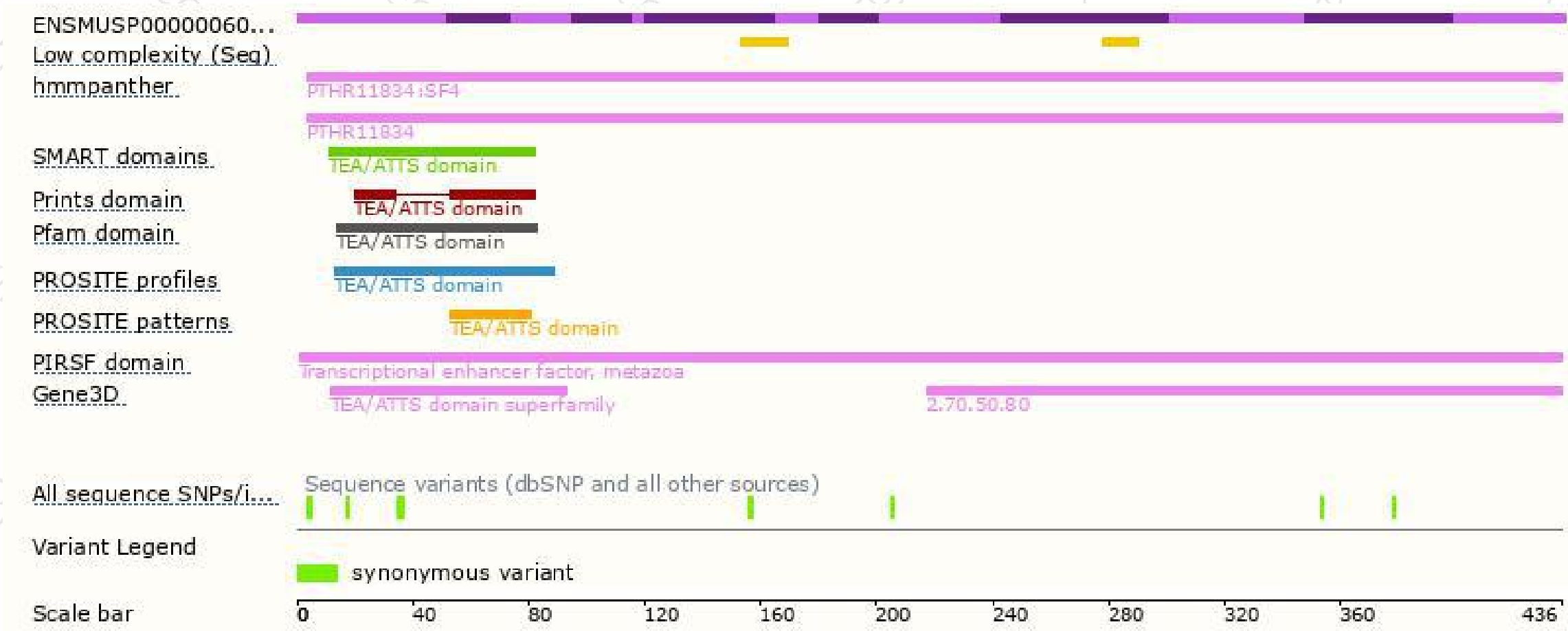
The strategy is based on the design of *Tead1-201* transcript,The transcription is shown below



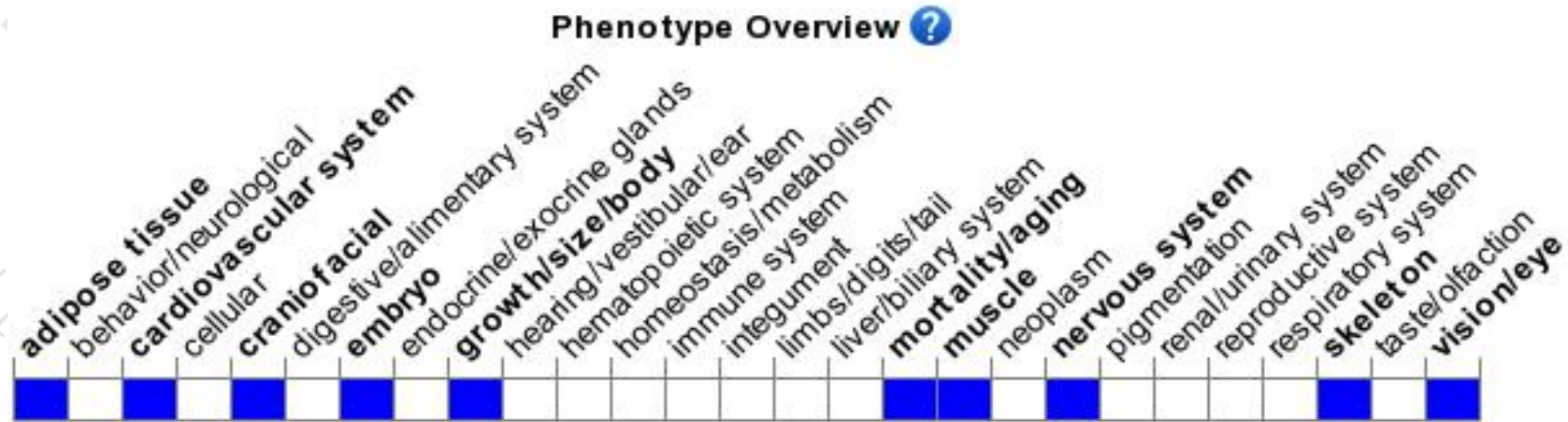
Genomic location distribution



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 disruptions in this gene die between embryonic day 11 and 12.5. Abnormalities were seen in heart development.

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

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