

Tardbp Cas9-CKO Strategy

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Project Overview

Project Name

Tardbp

Project type

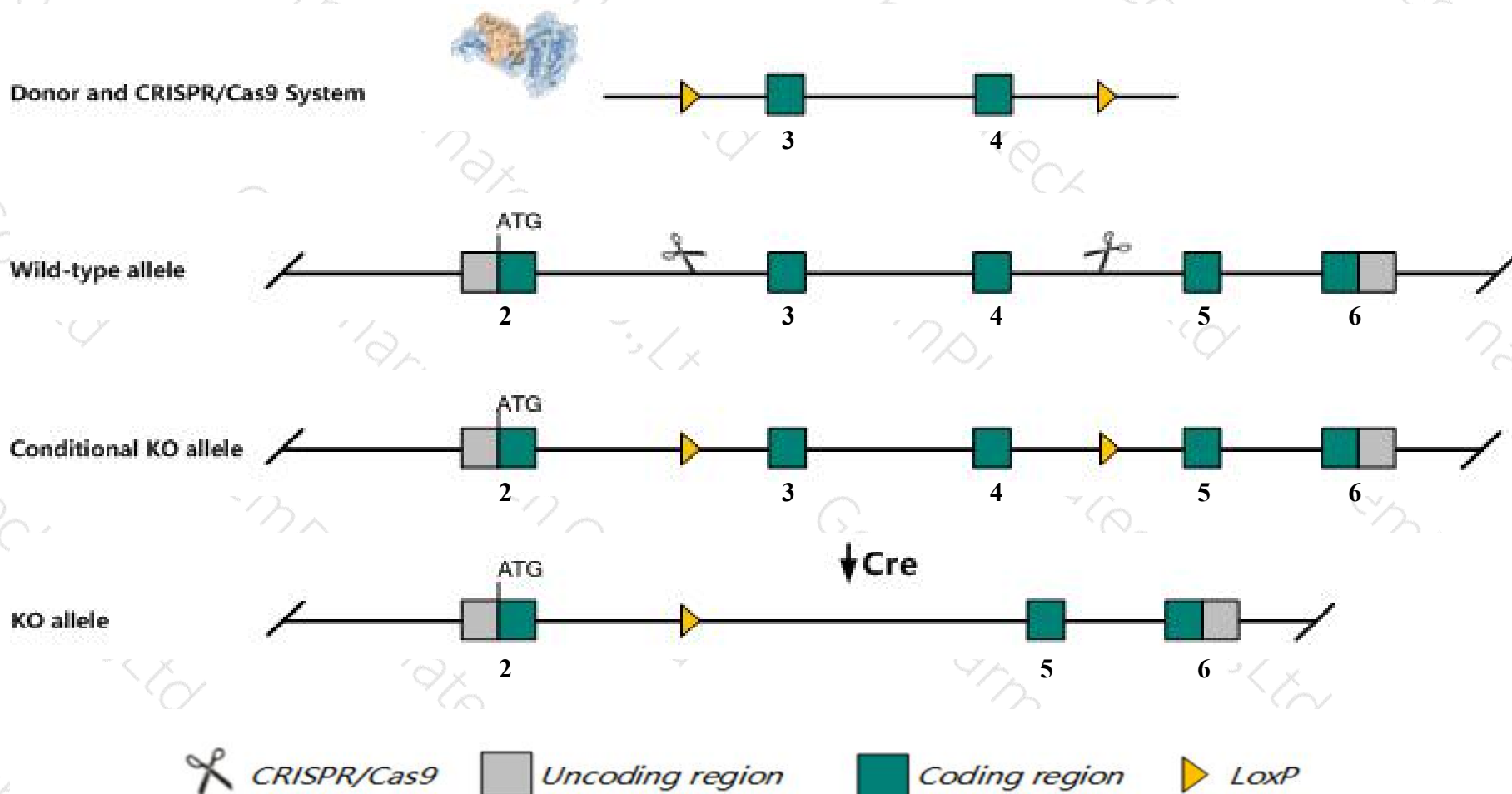
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



- The *Tardbp* gene has 30 transcripts. According to the structure of *Tardbp* gene, exon3-exon4 of *Tardbp*-202 (ENSMUST00000084125.9) transcript is recommended as the knockout region. The region contains 305bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Tardbp* gene. The brief process is as follows: CRISPR/Cas9 system and Donor 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.
- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- According to the existing MGI data, Homozygous deficient mice display embryonic lethality before somite formation with impaired inner cell mass proliferation.
- The *Tardbp* gene is located on the Chr4. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Tardbp TAR DNA binding protein [Mus musculus (house mouse)]

Gene ID: 230908, updated on 19-Mar-2019

Summary



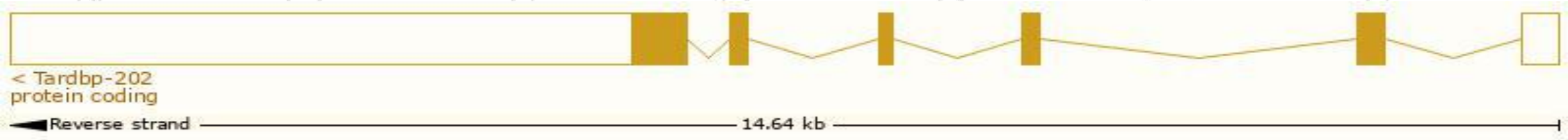
Official Symbol	Tardbp provided by MGI
Official Full Name	TAR DNA binding protein provided by MGI
Primary source	MGI:MGI:2387629
See related	Ensembl:ENSMUSG00000041459
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1190002A23Rik, C85084, TDP-43, Tdp43
Expression	Broad expression in CNS E11.5 (RPKM 74.5), limb E14.5 (RPKM 48.1) and 22 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

The gene has 30 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tardbp-202	ENSMUST000000084125.9	7477	414aa	Protein coding	CCDS3897.1	Q544R5,Q921F2	TSL1 GENCODE basic APPRIS P1
Tardbp-210	ENSMUST00000172073.7	6513	304aa	Protein coding	CCDS38968	Q6VYI4	TSL5 GENCODE basic
Tardbp-209	ENSMUST00000165113.7	6495	288aa	Protein coding	CCDS38969	Q6BLD4	TSL5 GENCODE basic
Tardbp-206	ENSMUST00000105702.8	6425	302aa	Protein coding	CCDS38967	Q6VYI5	TSL5 GENCODE basic
Tardbp-204	ENSMUST00000105699.7	1904	295aa	Protein coding	CCDS38970	Q8R0B4	TSL1 GENCODE basic
Tardbp-223	ENSMUST00000189048.6	1096	298aa	Protein coding	CCDS38969	Q6BLD4	TSL1 GENCODE basic
Tardbp-203	ENSMUST00000095719.9	1011	304aa	Protein coding	CCDS38968	Q6VYI4	TSL1 GENCODE basic
Tardbp-205	ENSMUST00000105700.7	923	302aa	Protein coding	CCDS38967	Q6VYI5	TSL1 GENCODE basic
Tardbp-216	ENSMUST00000186947.6	818	243aa	Protein coding	-	A0A087WR97	CDS 3' incomplete TSL5
Tardbp-214	ENSMUST00000186711.1	814	18aa	Protein coding	-	A0A087WQ63	CDS 5' incomplete TSL3
Tardbp-227	ENSMUST00000190630.6	748	85aa	Protein coding	-	A0A087WQX9	CDS 5' incomplete TSL2
Tardbp-211	ENSMUST00000185673.1	740	149aa	Protein coding	-	A0A087WSE4	CDS 3' incomplete TSL5
Tardbp-212	ENSMUST00000185824.6	709	200aa	Protein coding	-	A0A087WQ46	CDS 5' incomplete TSL5
Tardbp-218	ENSMUST00000187939.6	570	128aa	Protein coding	-	A0A087WS74	CDS 5' incomplete TSL5
Tardbp-221	ENSMUST00000188488.1	529	99aa	Protein coding	-	A0A087WSC9	CDS 5' incomplete TSL5
Tardbp-201	ENSMUST00000045180.13	2006	288aa	Nonsense mediated decay	-	Q6BLD4	TSL1
Tardbp-219	ENSMUST00000188134.6	1773	298aa	Nonsense mediated decay	-	Q6BLD4	TSL5
Tardbp-228	ENSMUST00000190896.6	1411	84aa	Nonsense mediated decay	-	A0A087WPF7	TSL5
Tardbp-230	ENSMUST00000191450.6	1304	285aa	Nonsense mediated decay	-	A0A087WRZ5	TSL5
Tardbp-208	ENSMUST00000147391.2	1011	25aa	Nonsense mediated decay	-	A0A087WQT4	CDS 5' incomplete TSL2
Tardbp-207	ENSMUST00000140897.7	781	140aa	Nonsense mediated decay	-	H3BJV1	CDS 5' incomplete TSL5
Tardbp-226	ENSMUST00000190552.6	741	175aa	Nonsense mediated decay	-	A0A087WSH7	CDS 5' incomplete TSL5
Tardbp-229	ENSMUST00000191378.6	684	138aa	Nonsense mediated decay	-	A0A087WRP4	CDS 5' incomplete TSL5
Tardbp-215	ENSMUST00000186729.6	676	88aa	Nonsense mediated decay	-	A0A087WNY6	CDS 5' incomplete TSL5
Tardbp-224	ENSMUST00000190287.1	517	78aa	Nonsense mediated decay	-	A0A087WS17	CDS 5' incomplete TSL5
Tardbp-222	ENSMUST00000189041.1	908	No protein	Processed transcript	-	-	TSL5
Tardbp-220	ENSMUST00000188380.1	731	No protein	Processed transcript	-	-	TSL5
Tardbp-217	ENSMUST00000187937.1	629	No protein	Processed transcript	-	-	TSL5
Tardbp-213	ENSMUST00000186317.1	358	No protein	Processed transcript	-	-	TSL5
Tardbp-225	ENSMUST00000190478.1	370	No protein	Retained intron	-	-	TSL2

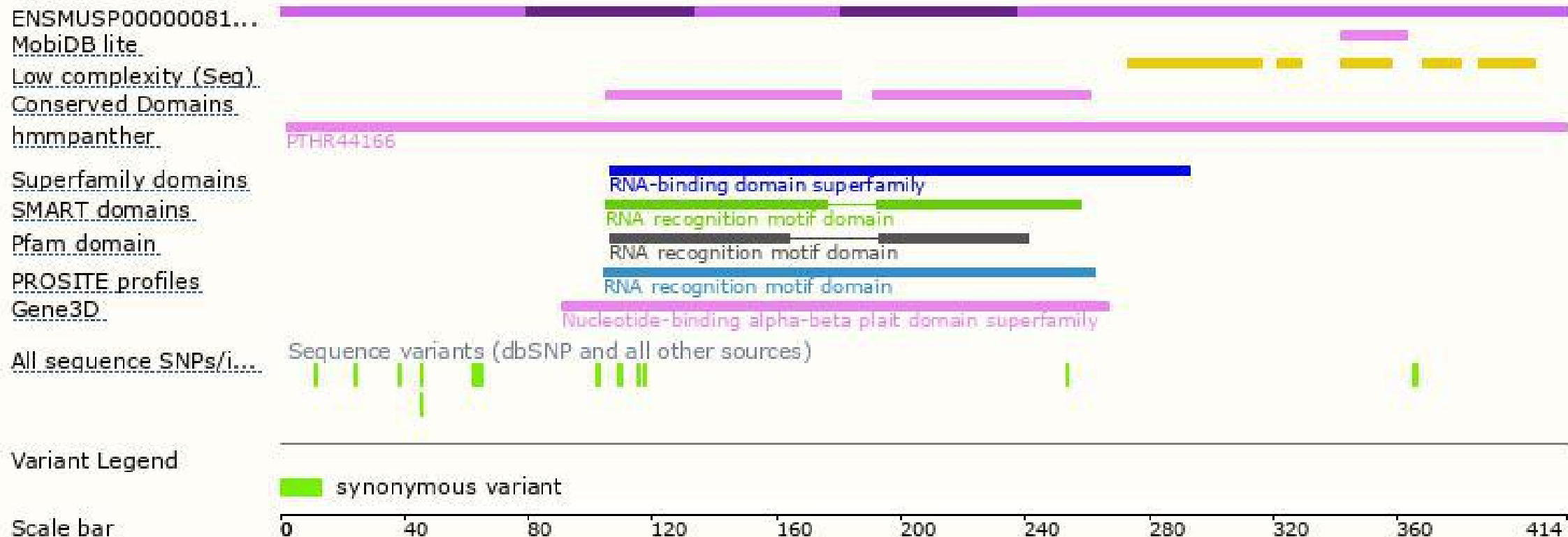
The strategy is based on the design of *Tardbp-202* transcript,The transcription is shown below



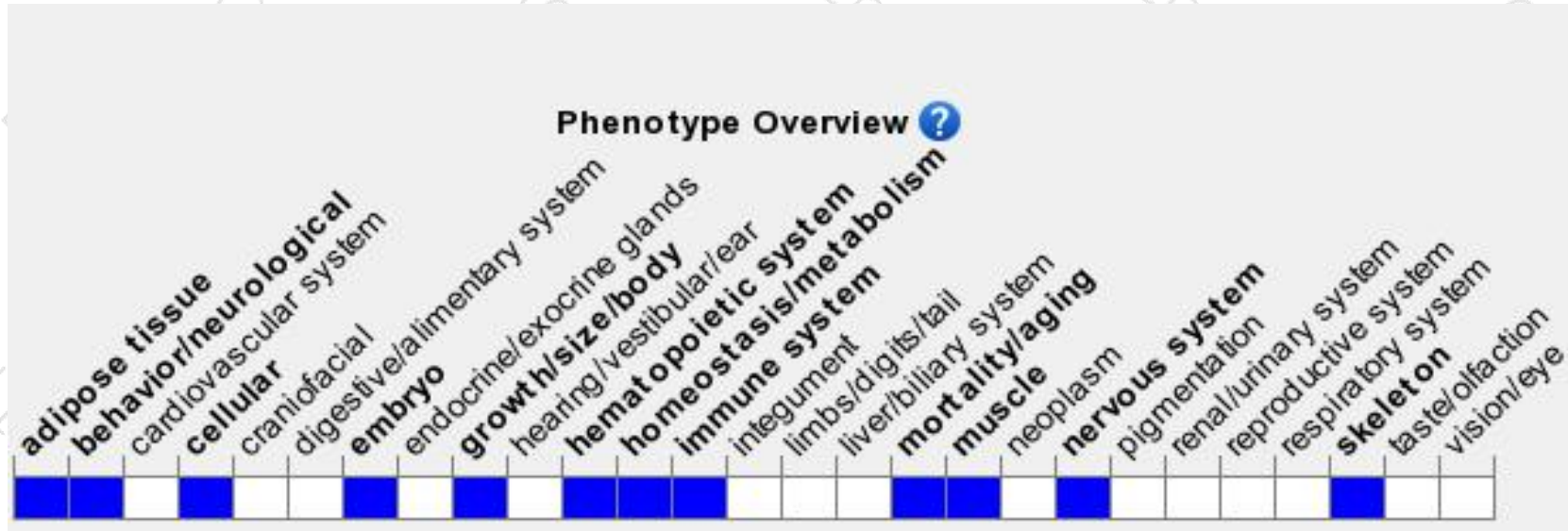
Genomic location distribution



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 deficient mice display embryonic lethality before somite formation with impaired inner cell mass proliferation.

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

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