Tln1 Cas9-CKO Strategy

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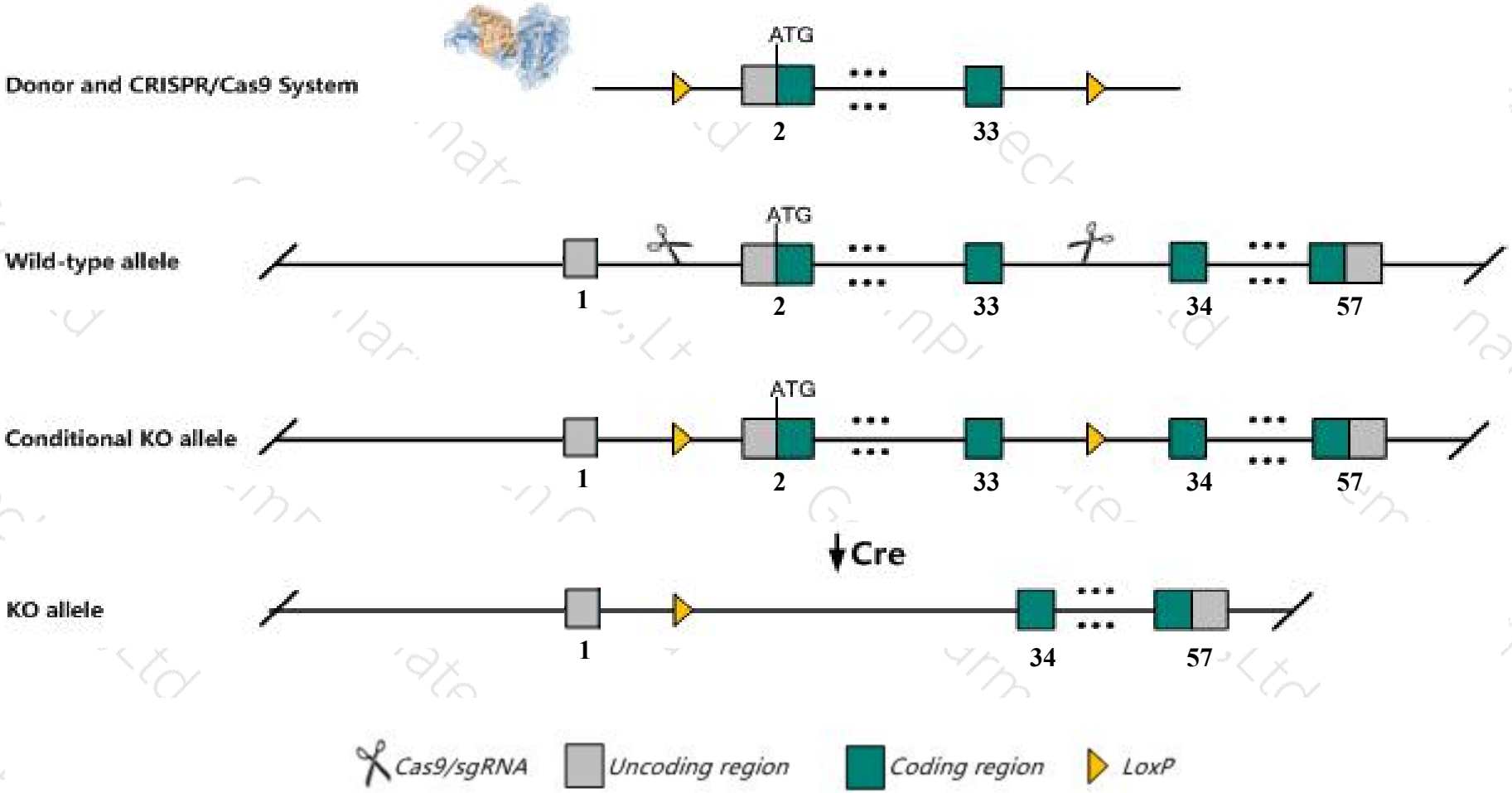
Project Overview

Project Name	***Tln1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tln1* gene. The schematic diagram is as follows:



Technical routes

- The *Tln1* gene has 8 transcripts. According to the structure of *Tln1* gene, exon2-exon33 of *Tln1-201* (ENSMUST00000030187.13) transcript is recommended as the knockout region.The region contains start codon ATG. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Tln1* 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.

Notice

- According to the existing MGI data,Mice homozygous for either one of two knock-out alleles display early developmental anomalies, reduced embryo size, and embryonic lethality due to impaired cell migration at the gastrulation stage.

- The *Tln1* 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）

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Tln1 talin 1 [*Mus musculus* (house mouse)]

Gene ID: 21894, updated on 3-Sep-2019

Summary

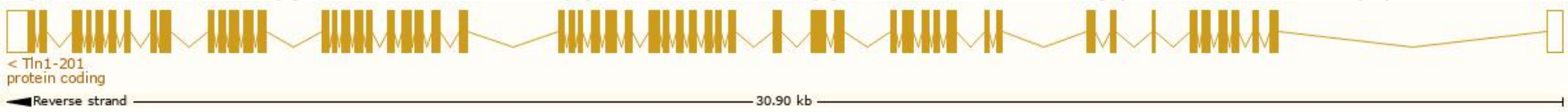
Official Symbol	Tln1 provided by MGI
Official Full Name	talin 1 provided by MGI
Primary source	MGI:MGI:1099832
See related	Ensembl:ENSMUSG00000028465
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Tln
Expression	Ubiquitous expression in spleen adult (RPKM 86.9), ovary adult (RPKM 82.7) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

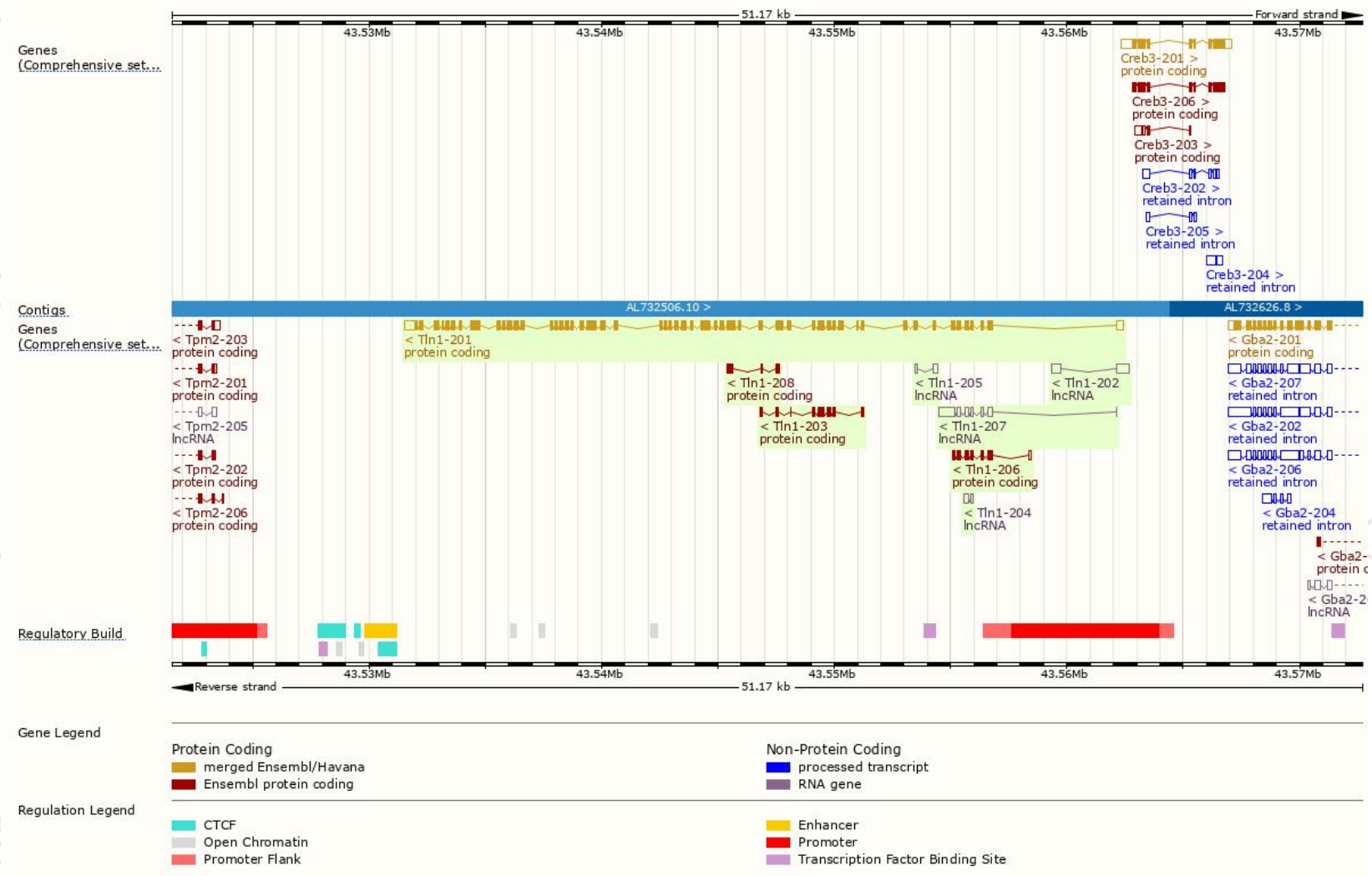
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tln1-201	ENSMUST00000030187.13	8393	2541aa	Protein coding	CCDS18101	P26039	TSL:1 GENCODE basic APPRIS P1
Tln1-203	ENSMUST00000125509.1	836	279aa	Protein coding	-	F6SX70	CDS 5' and 3' incomplete TSL:5
Tln1-206	ENSMUST00000130353.1	836	241aa	Protein coding	-	A2AIM2	CDS 3' incomplete TSL:5
Tln1-208	ENSMUST00000134623.1	364	122aa	Protein coding	-	F6S1V7	CDS 5' and 3' incomplete TSL:5
Tln1-207	ENSMUST00000130670.1	1376	No protein	lncRNA	-	-	TSL:5
Tln1-202	ENSMUST00000123985.1	937	No protein	lncRNA	-	-	TSL:1
Tln1-204	ENSMUST00000126078.1	283	No protein	lncRNA	-	-	TSL:3
Tln1-205	ENSMUST00000127262.1	274	No protein	lncRNA	-	-	TSL:5

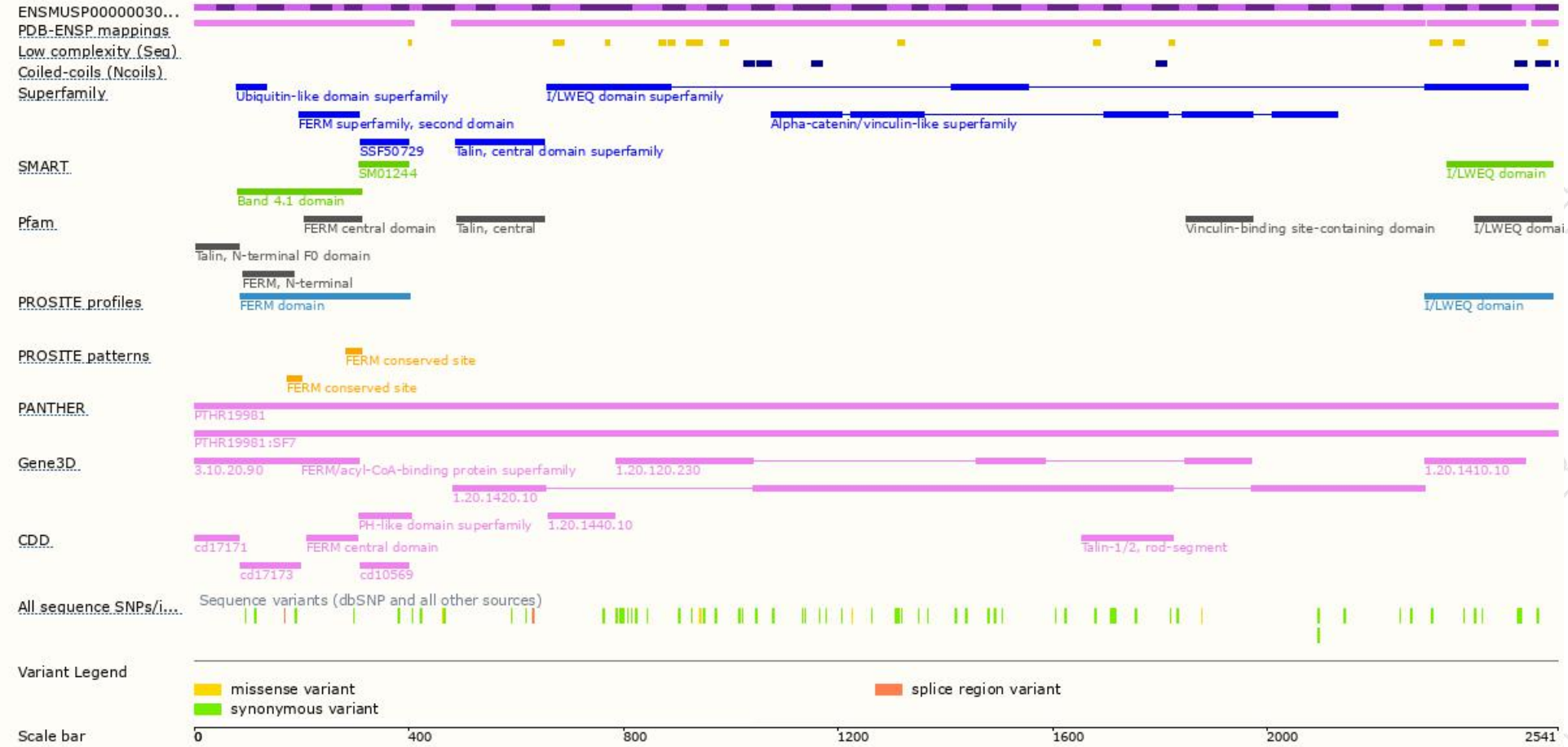
The strategy is based on the design of *Tln1-201* transcript,The transcription is shown below



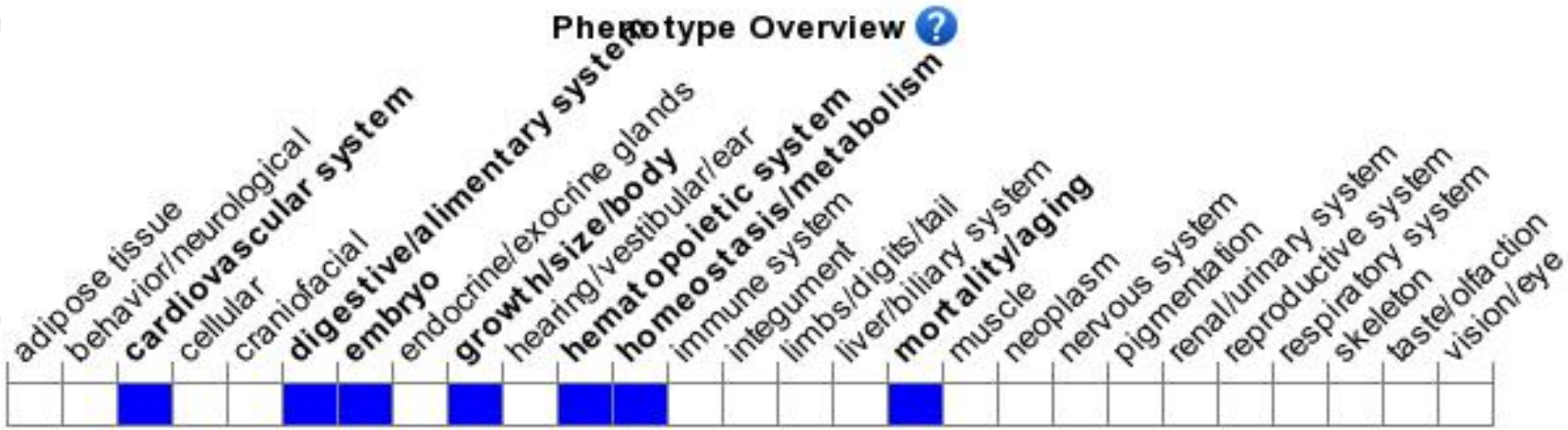
Genomic location distribution



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 either one of two knock-out alleles display early developmental anomalies, reduced embryo size, and embryonic lethality due to impaired cell migration at the gastrulation stage.

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

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