

Adamtsl4 Cas9-CKO Strategy

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Project Overview

Project Name

Adamtsl4

Project type

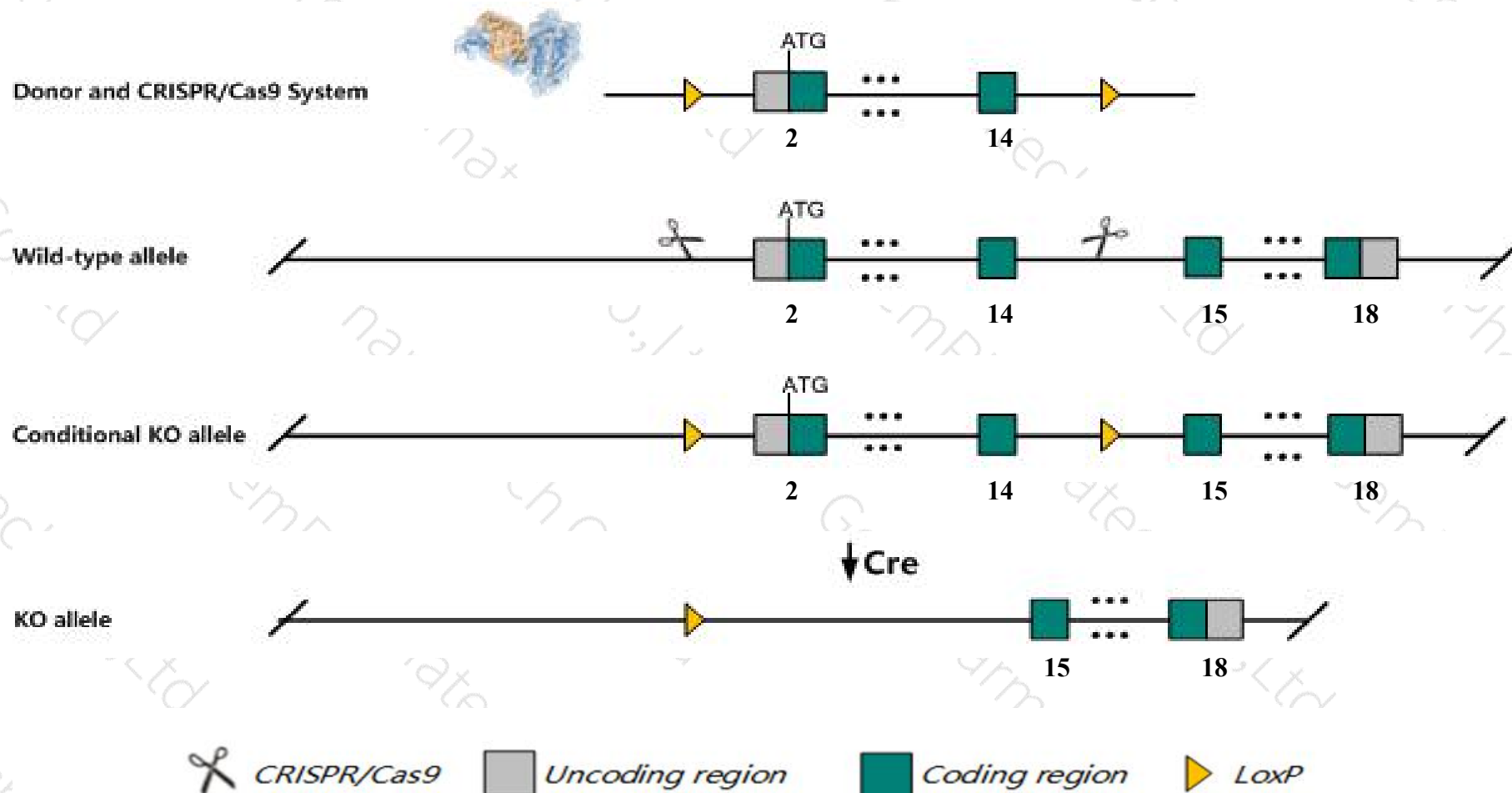
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Adamtsl4* gene. The schematic diagram is as follows:



Technical routes

- The *Adamtsl4* gene has 5 transcripts. According to the structure of *Adamtsl4* gene, exon2-exon14 of *Adamtsl4*-202(ENSMUST00000117782.7) 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 *Adamtsl4* 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, mice homozygous for an ENU-induced single point mutation exhibit ectopia lentis, increased ocular axial length, and focal retinal pigment epithelium defects with reduced retinal pigmentation and altered cellular morphology.
- The *Adamtsl4* gene is located on the Chr3. 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)

Adamtsl4 ADAMTS-like 4 [Mus musculus (house mouse)]

Gene ID: 229595, updated on 13-Mar-2020

Summary



Official Symbol Adamtsl4 provided by [MGI](#)

Official Full Name ADAMTS-like 4 provided by [MGI](#)

Primary source [MGI:MGI:2389008](#)

See related [Ensembl:ENSMUSG00000015850](#)

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 ADAMTSL-4, Tsrc1

Summary The protein encoded by this gene is a member of the ADAMTS superfamily of secreted proteins, which contain a metalloprotease domain at the N-terminus and a C-terminal ancillary domain. ADAMTS-like proteins lack protease activity and resemble the ancillary domain of ADAMTS proteins. ADAMTS-like proteins have been implicated in regulation of the extracellular matrix. The encoded protein contains 7 thrombospondin type 1 repeats, a conserved extracellular domain. Alternative splicing results in multiple transcript variants. [provided by RefSeq, Sep 2014]

Expression Broad expression in lung adult (RPKM 18.4), bladder adult (RPKM 18.2) and 17 other tissues [See more](#)

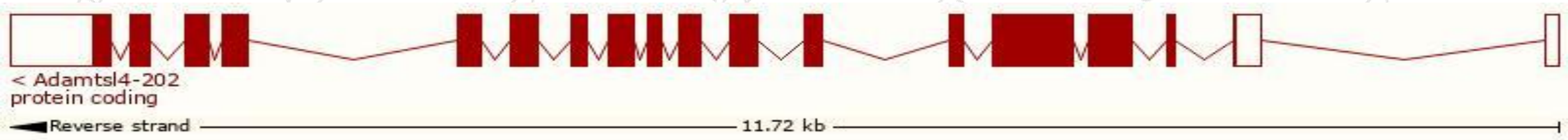
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

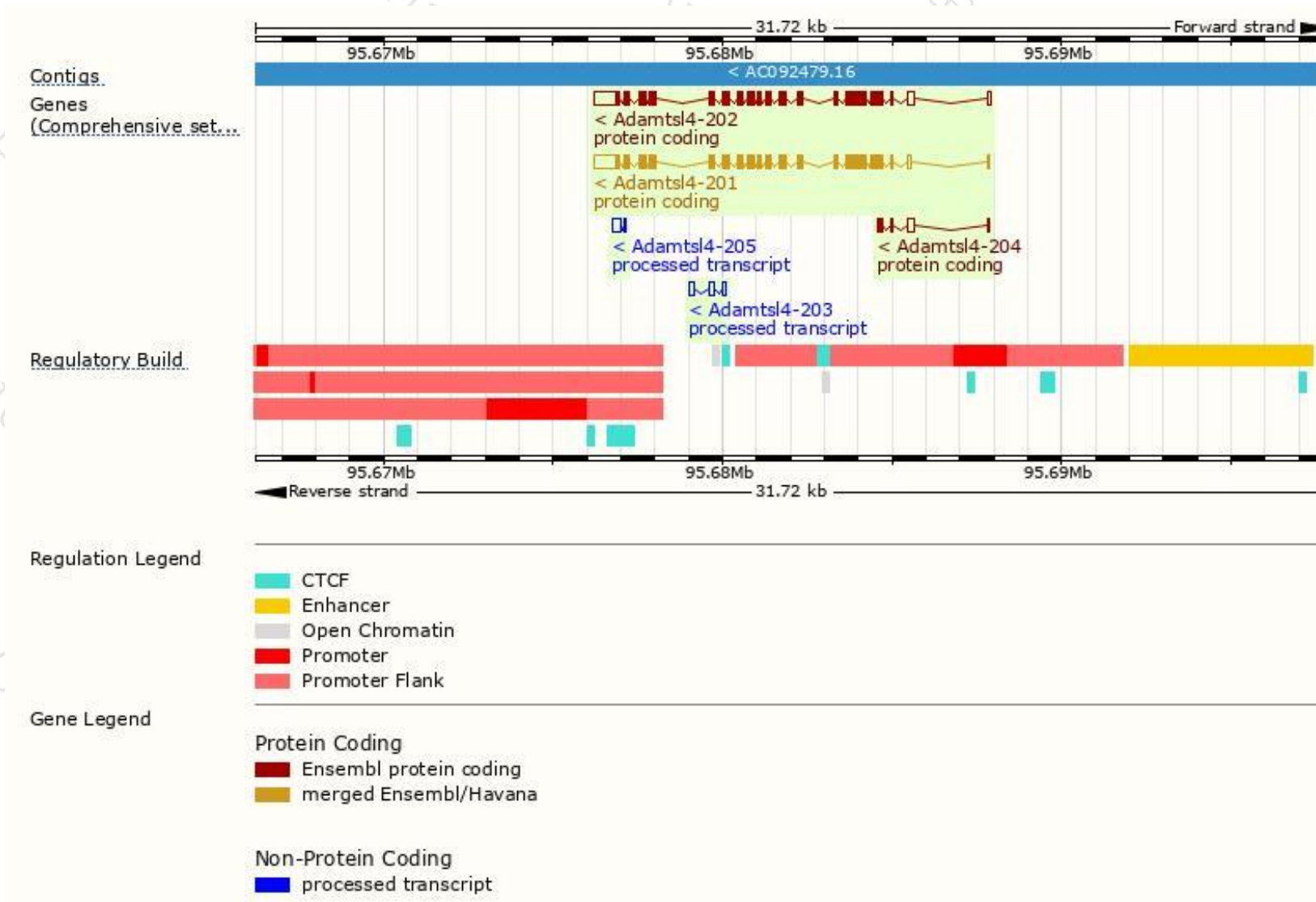
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Adamtsl4-202	ENSMUST00000117782.7	4036	1036aa	Protein coding	CCDS17618	Q80T21	TSL:1 GENCODE basic APPRIS P1
Adamtsl4-201	ENSMUST00000015994.3	3856	1036aa	Protein coding	CCDS17618	Q80T21	TSL:1 GENCODE basic APPRIS P1
Adamtsl4-204	ENSMUST00000148854.1	452	70aa	Protein coding	-	D3Z0T6	CDS 3' incomplete TSL:3
Adamtsl4-203	ENSMUST00000124410.1	403	No protein	Processed transcript	-	-	TSL:3
Adamtsl4-205	ENSMUST00000151054.1	288	No protein	Processed transcript	-	-	TSL:3

The strategy is based on the design of *Adamtsl4-202* transcript,the transcription is shown below:



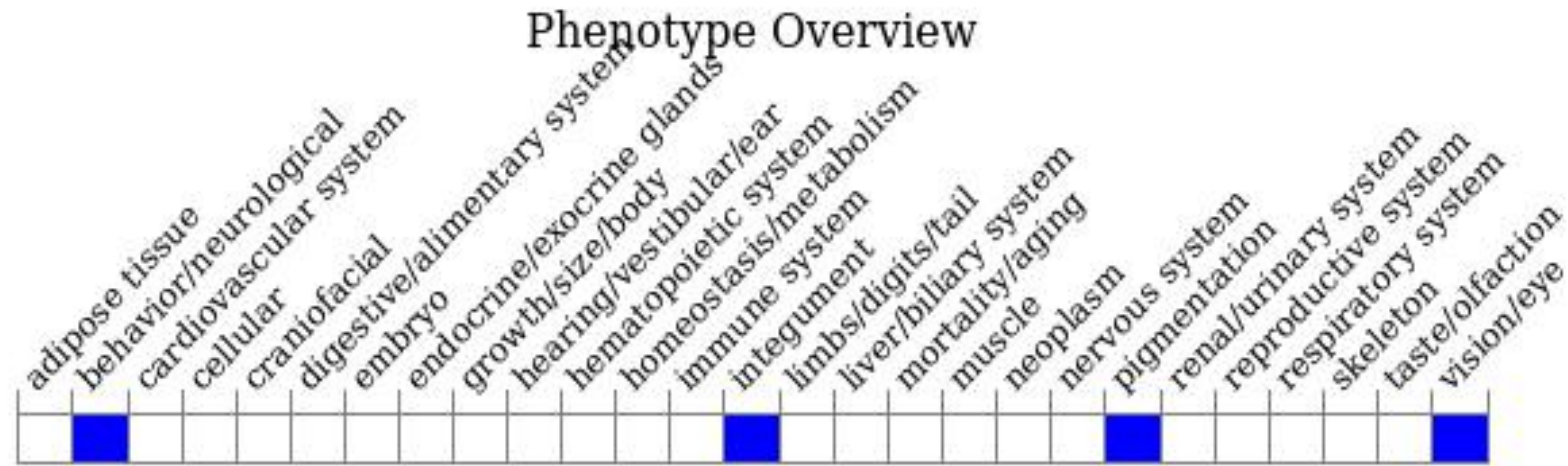
Genomic location distribution



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, mice homozygous for an ENU-induced single point mutation exhibit ectopia lentis, increased ocular axial length, and focal retinal pigment epithelium defects with reduced retinal pigmentation and altered cellular morphology.

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

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