

***Adams15* Cas9-CKO Strategy**

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Reviewer: Daohua Xu

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Project Overview

Project Name

Adamts15

Project type

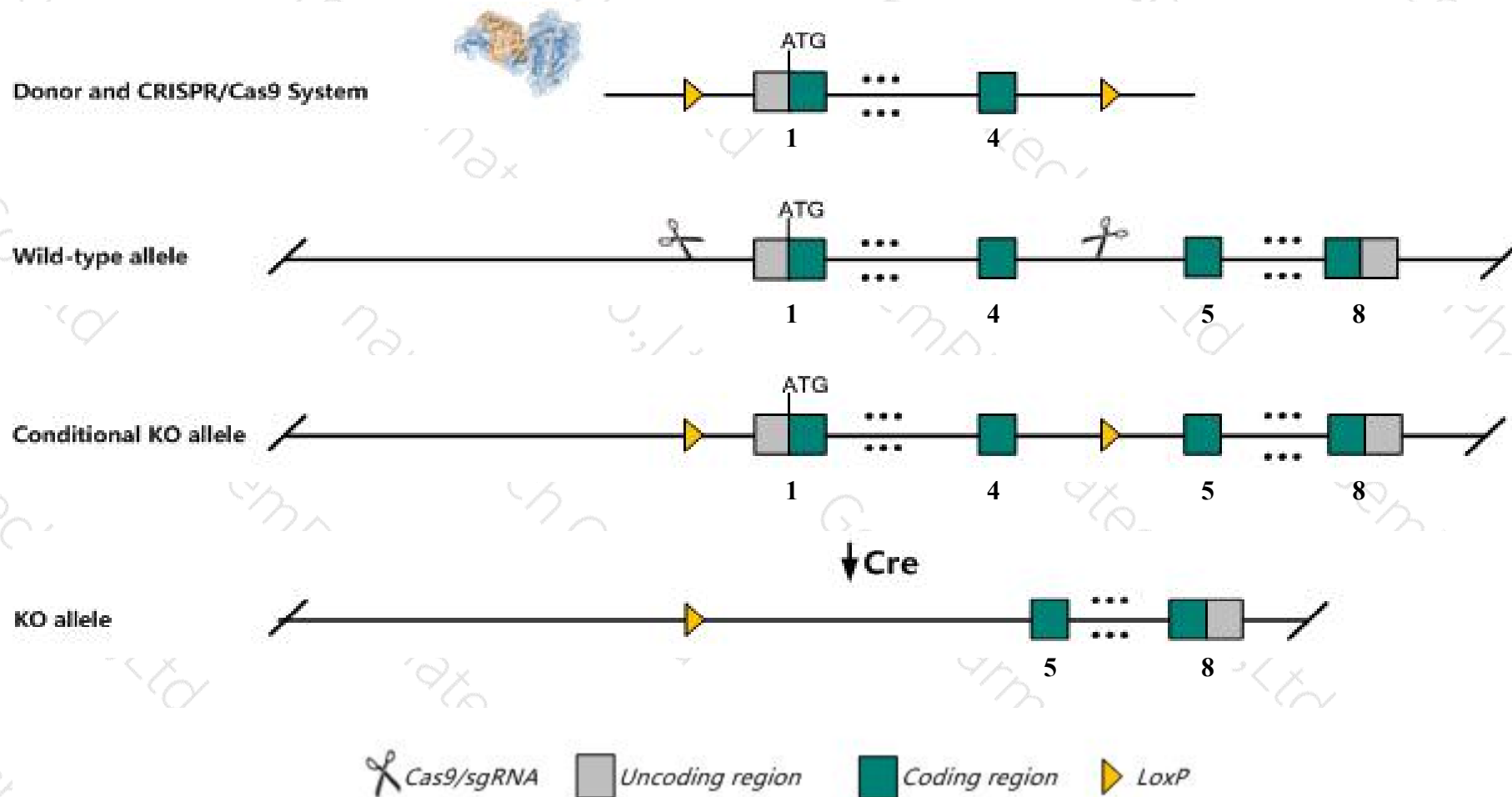
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Adamts15* gene. The schematic diagram is as follows:



Technical routes

- The *Adamts15* gene has 3 transcripts. According to the structure of *Adamts15* gene, exon1-exon4 of *Adamts15-201*(ENSMUST00000065112.6) 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 *Adamts15* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA 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 was 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

- The *Adamts15* gene is located on the Chr9. 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.
- Transcript *Adamts15*-203 may not be affected.
- 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.

Adamts15 a disintegrin-like and metallopeptidase (reprolysin type) with thrombospondin type 1 motif, 15 [Mus musculus (house mouse)]

Gene ID: 235130, updated on 13-Mar-2020

Summary

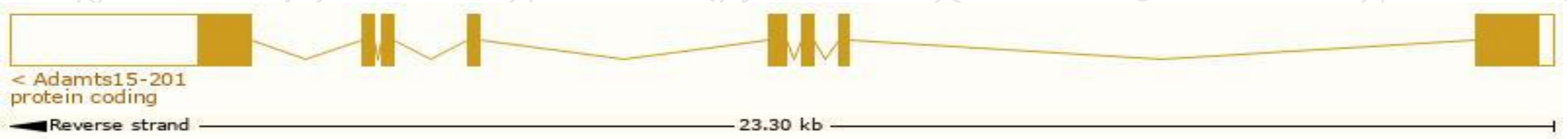
Official Symbol	Adamts15 provided by MGI
Official Full Name	a disintegrin-like and metallopeptidase (reprolysin type) with thrombospondin type 1 motif, 15 provided by MGI
Primary source	MGI:MGI:2449569
See related	Ensembl:ENSMUSG00000033453
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Summary	This gene encodes a member of "a disintegrin and metalloproteinase with thrombospondin motifs" (ADAMTS) family of multi-domain matrix-associated metalloendopeptidases that have diverse roles in tissue morphogenesis and pathophysiological remodeling, in inflammation and in vascular biology. The encoded preproprotein undergoes proteolytic processing to generate an active versicanase enzyme. This gene is located adjacent to a related ADAMTS gene (Adamts8) on chromosome 9. [provided by RefSeq, Jul 2016]
Expression	Broad expression in lung adult (RPKM 11.0), limb E14.5 (RPKM 9.9) and 21 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

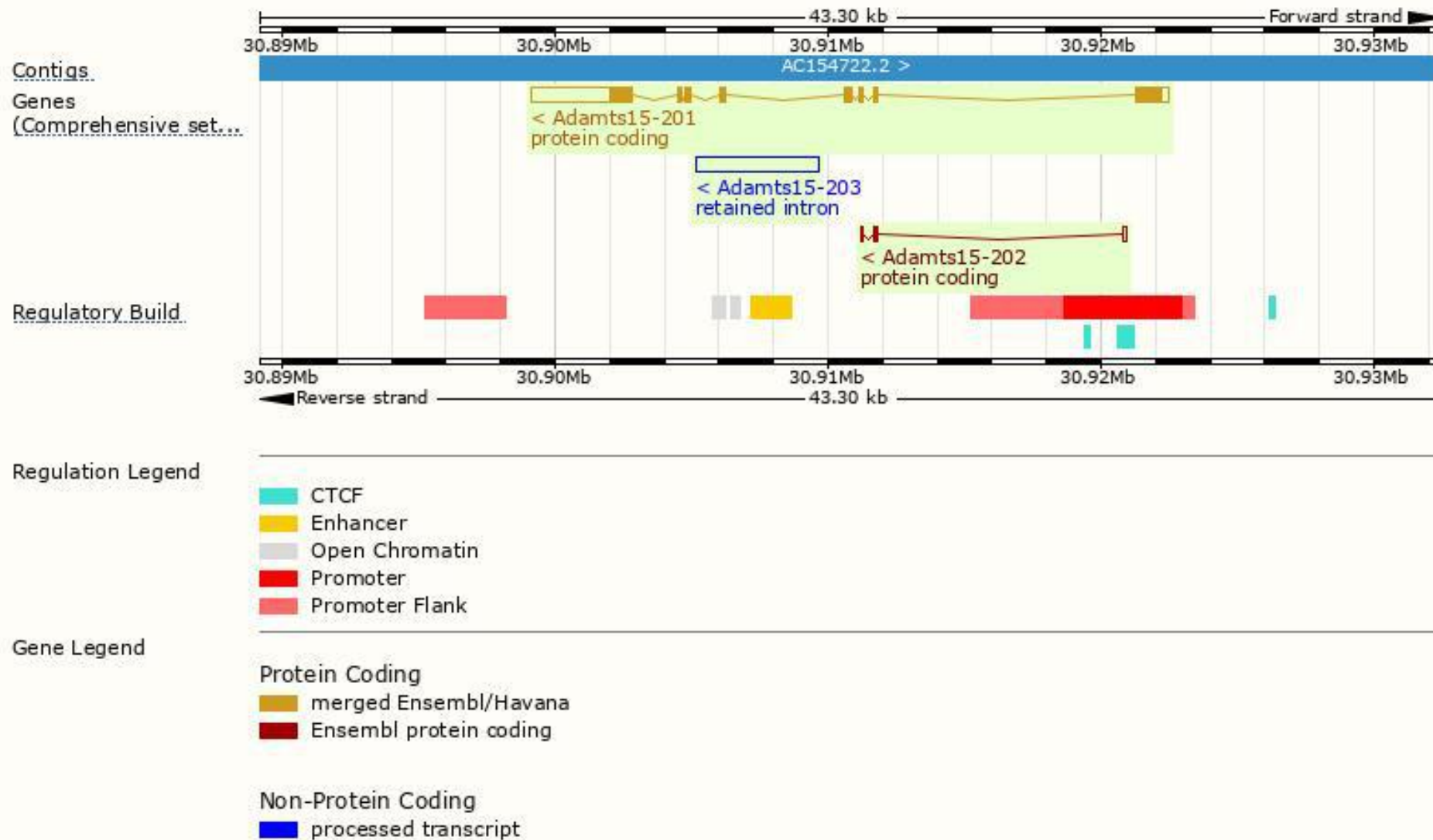
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Adamts15-201	ENSMUST00000065112.6	5928	950aa	Protein coding	CCDS22945	P59384	TSL:1 GENCODE basic APPRIS P1
Adamts15-202	ENSMUST00000216215.1	354	56aa	Protein coding	-	A0A1L1SUC3	CDS 3' incomplete TSL:2
Adamts15-203	ENSMUST00000217070.1	4463	No protein	Retained intron	-	-	TSL:NA

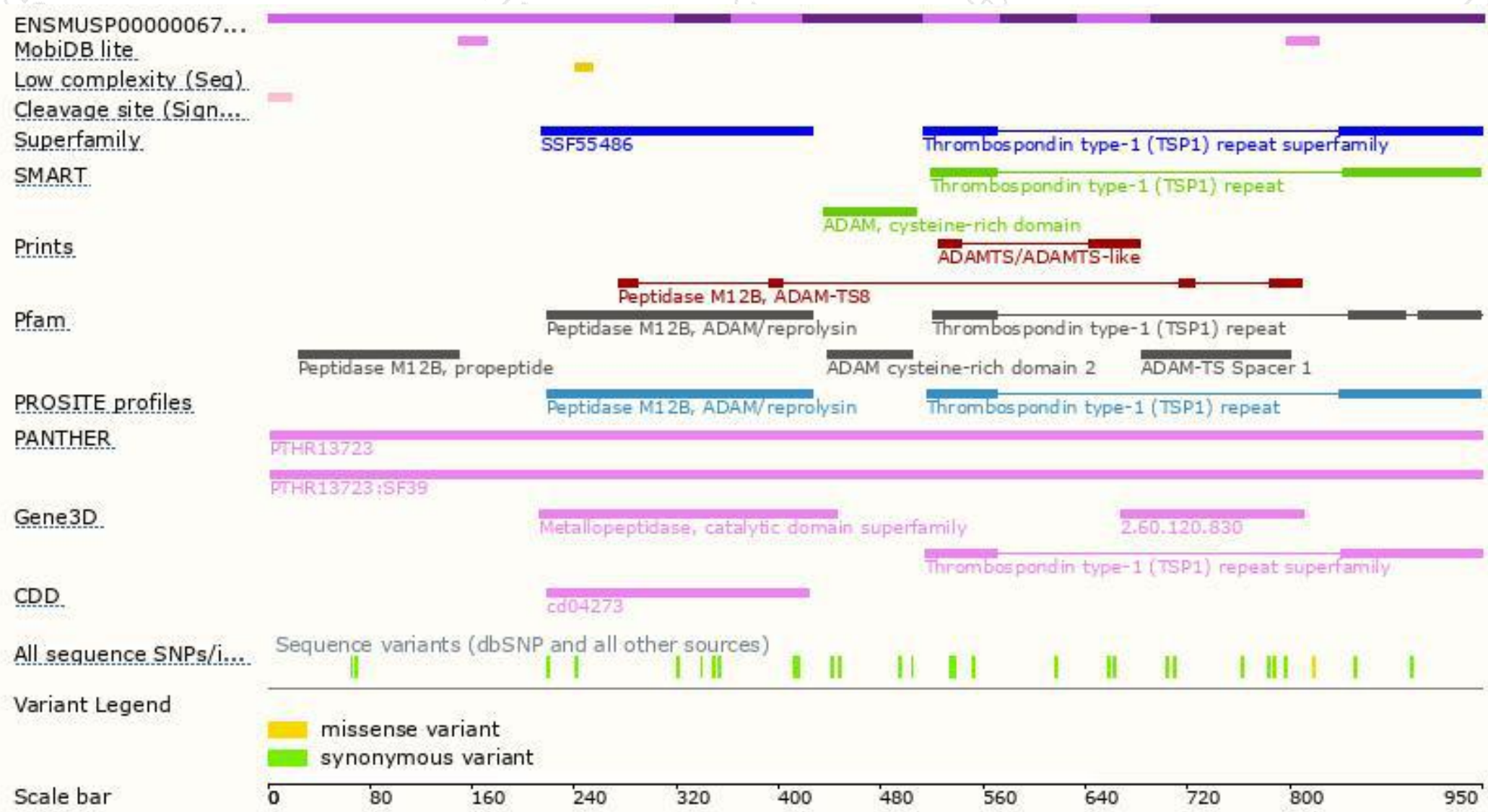
The strategy is based on the design of *Adamts15-201* transcript,the transcription is shown below:



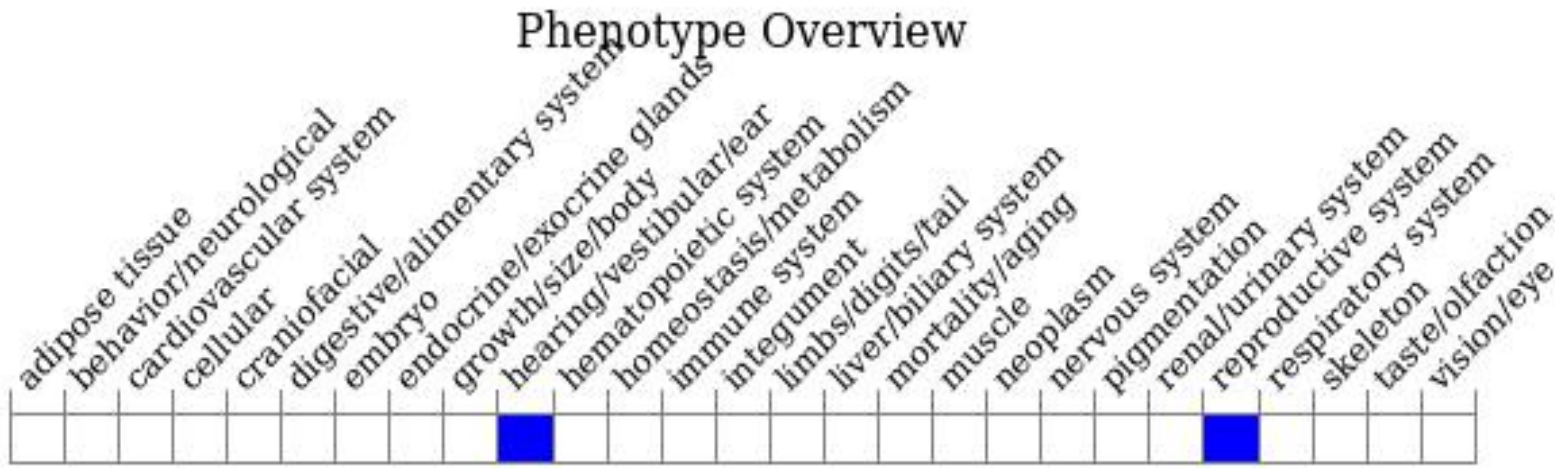
Genomic location distribution



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/>).

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

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