

***Trps15* Cas9-CKO Strategy**

Designer:

Daohua Xu

Reviewer:

Huimin Su

Design Date:

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Project Overview

Project Name

Tmprss15

Project type

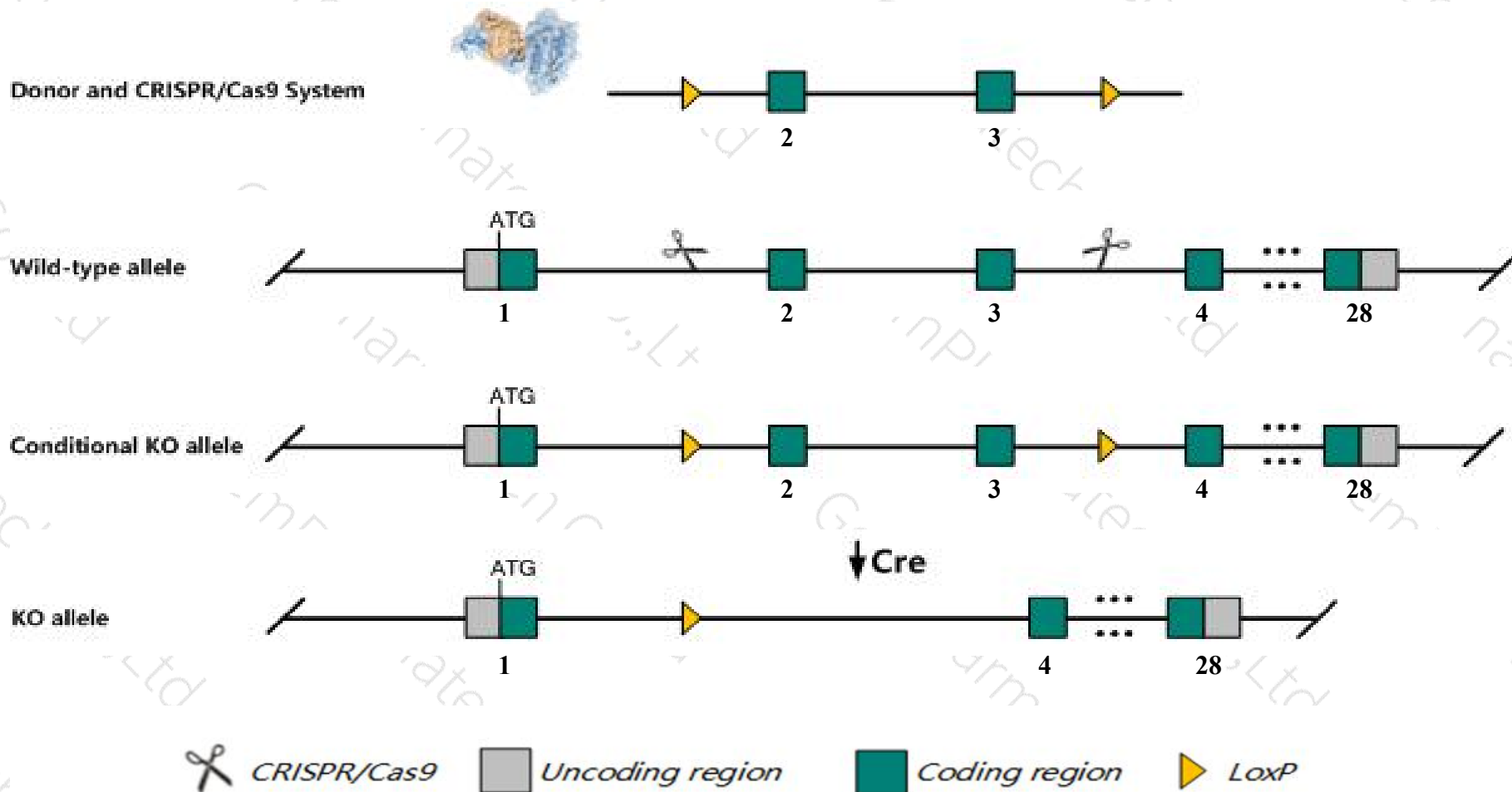
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tmprss15* gene. The schematic diagram is as follows:



- The *Tmprss15* gene has 2 transcripts. According to the structure of *Tmprss15* gene, exon2-exon3 of *Tmprss15-201* (ENSMUST00000023566.10) transcript is recommended as the knockout region. The region contains 199bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Tmprss15* 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

- The *Tmprss15* gene is located on the Chr16. 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)

Tmprss15 transmembrane protease, serine 15 [Mus musculus (house mouse)]

Gene ID: 19146, updated on 31-Jan-2019

Summary



Official Symbol Tmprss15 provided by [MGI](#)

Official Full Name transmembrane protease, serine 15 provided by [MGI](#)

Primary source [MGI:MGI:1197523](#)

See related [Ensembl:ENSMUSG00000022857](#)

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 Entk, Prss7

Summary This gene encodes an enzyme that proteolytically activates the pancreatic proenzyme trypsinogen, converting it into trypsin. The encoded protein is cleaved into two chains that form a heterodimer linked by a disulfide bond. Alternatively spliced transcript variants encoding multiple isoforms have been observed for this gene. [provided by RefSeq, Jan 2013]

Expression Biased expression in small intestine adult (RPKM 1.8) and duodenum adult (RPKM 0.4)[See more](#)

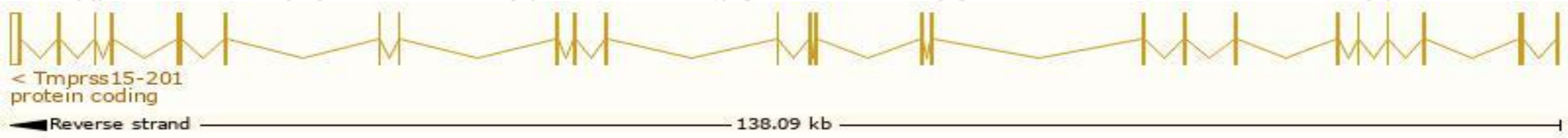
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

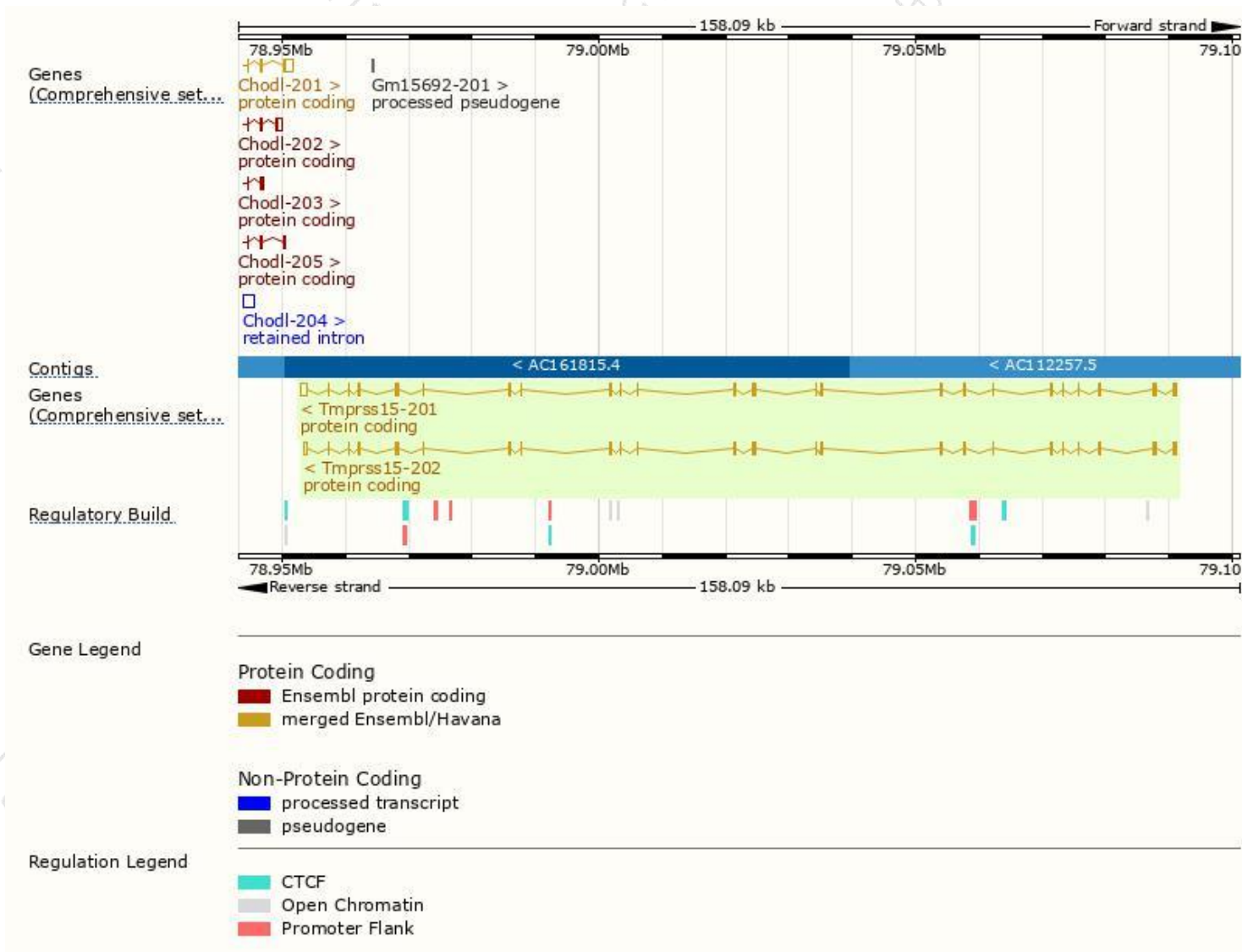
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tmprss15-201	ENSMUST00000023566.10	4177	1069aa	Protein coding	CCDS28280	P97435	TSL:1 GENCODE basic APPRIS P3
Tmprss15-202	ENSMUST00000060402.5	3681	1054aa	Protein coding	CCDS37380	E9Q6Y6	TSL:2 GENCODE basic APPRIS ALT2

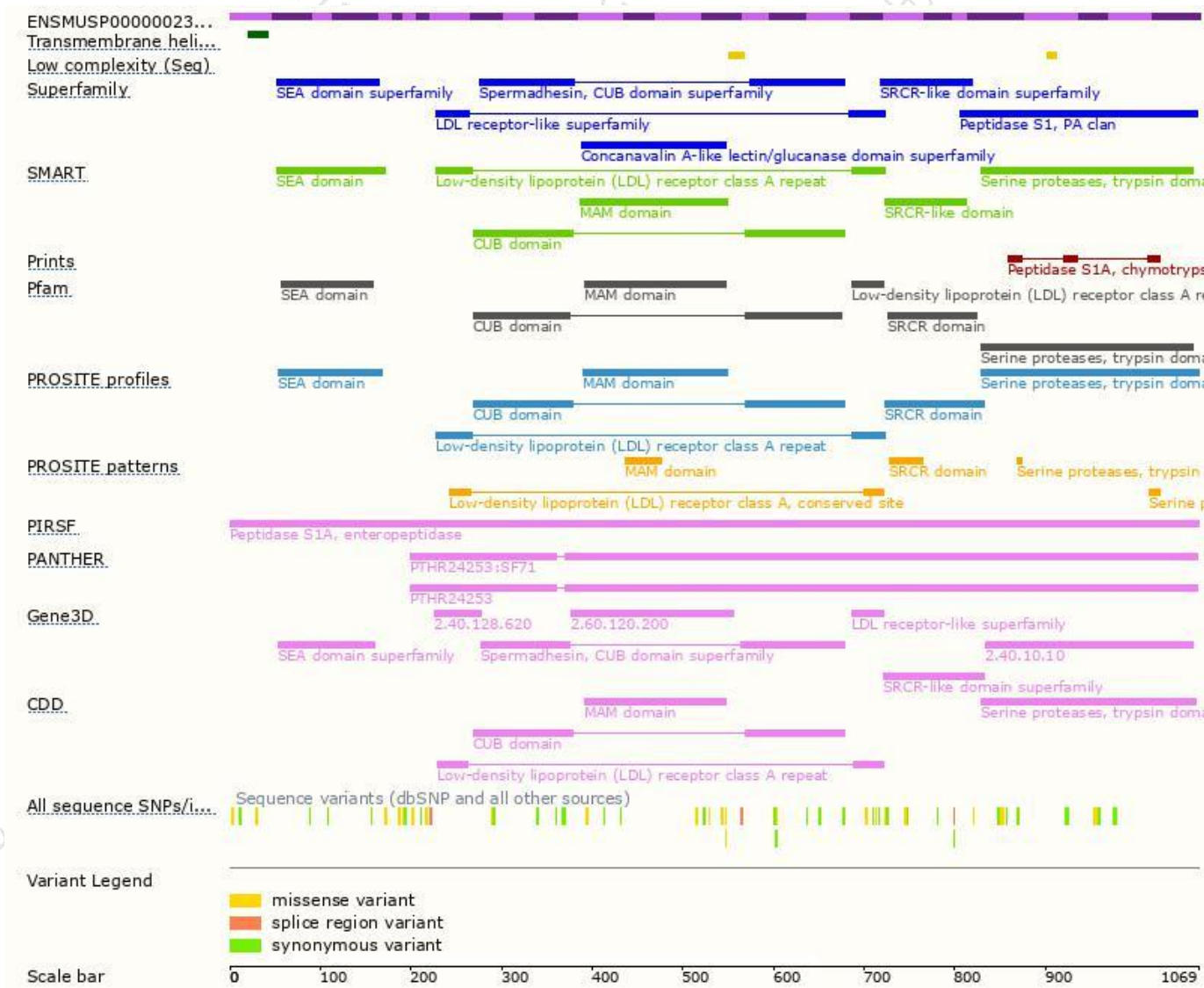
The strategy is based on the design of *Tmprss15-201* transcript,The transcription is shown below



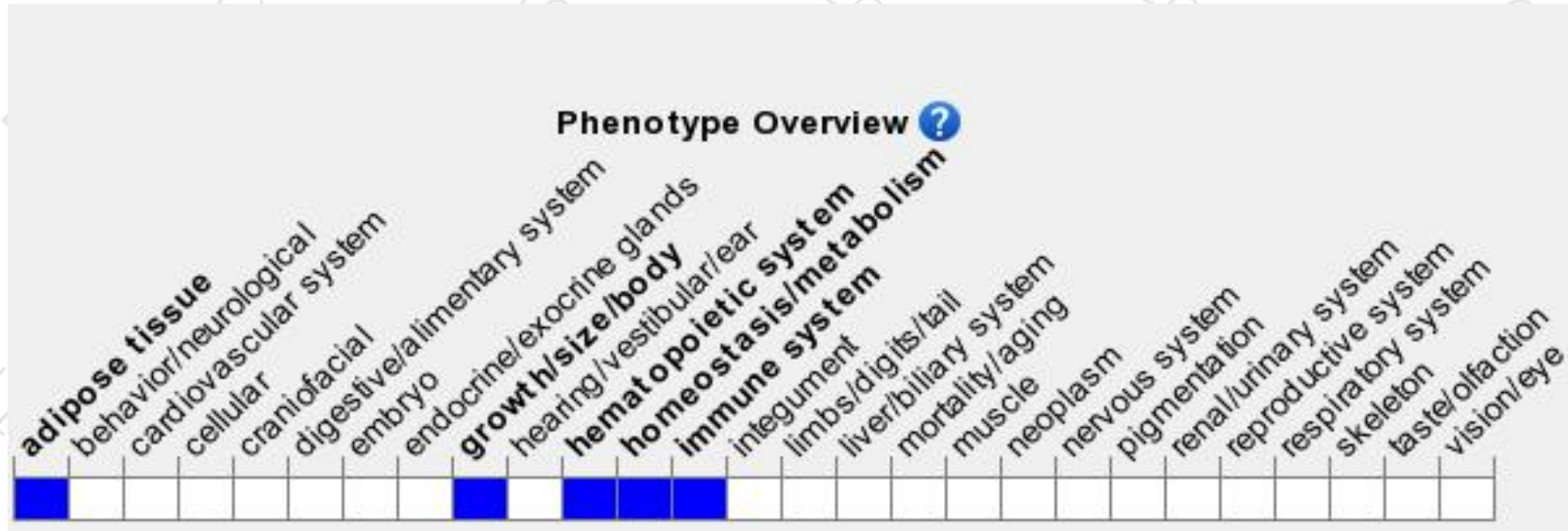
Genomic location distribution



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.

Tel: 400-9660890

