

Gsn Cas9-KO Strategy

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Project Overview

Project Name

Gsn

Project type

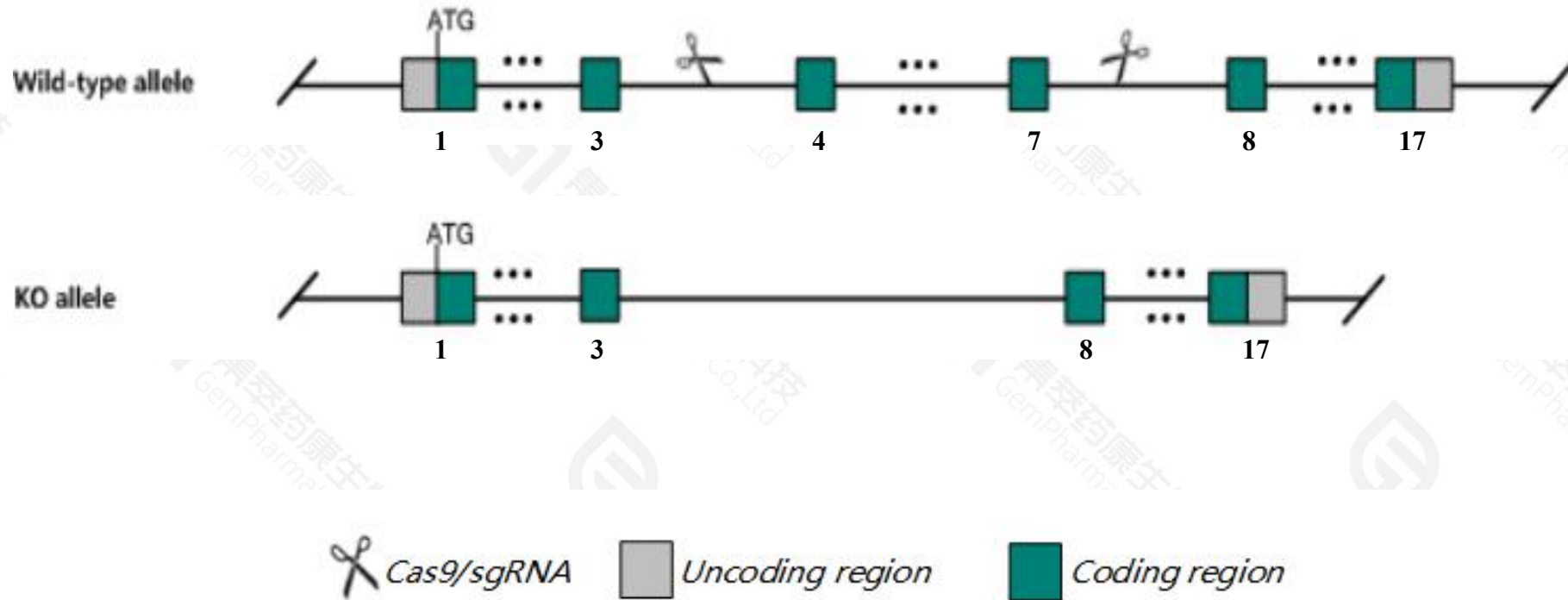
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



- The *Gsn* gene has 7 transcripts. According to the structure of *Gsn* gene, exon4-exon7 of *Gsn*-201(ENSMUST00000028239.8) transcript is recommended as the knockout region. The region contains 535bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Gsn* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA 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.

- According to the existing MGI data, mice homozygous for disruptions in this gene display abnormalities in the immune system, platelet and platelet function, bone density, nervous and circulatory system. In addition, there are background related effects on viability and mammary gland development.
- The *Gsn* gene is located on the Chr2. 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Gsn gelsolin [Mus musculus (house mouse)]

Gene ID: 227753, updated on 23-Feb-2021

Summary



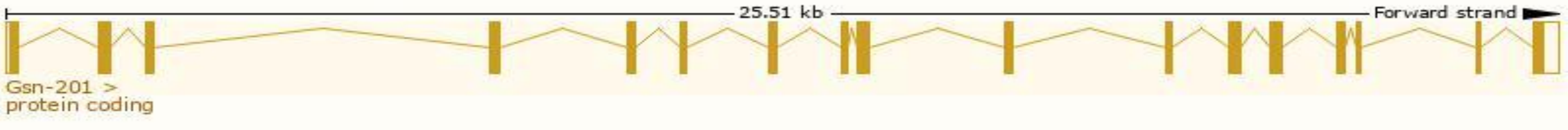
Official Symbol	Gsn provided by MGI
Official Full Name	gelsolin provided by MGI
Primary source	MGI:MGI:95851
See related	Ensembl:ENSMUSG00000026879
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	ADF
Expression	Biased expression in subcutaneous fat pad adult (RPKM 1628.5), bladder adult (RPKM 1379.3) and 12 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

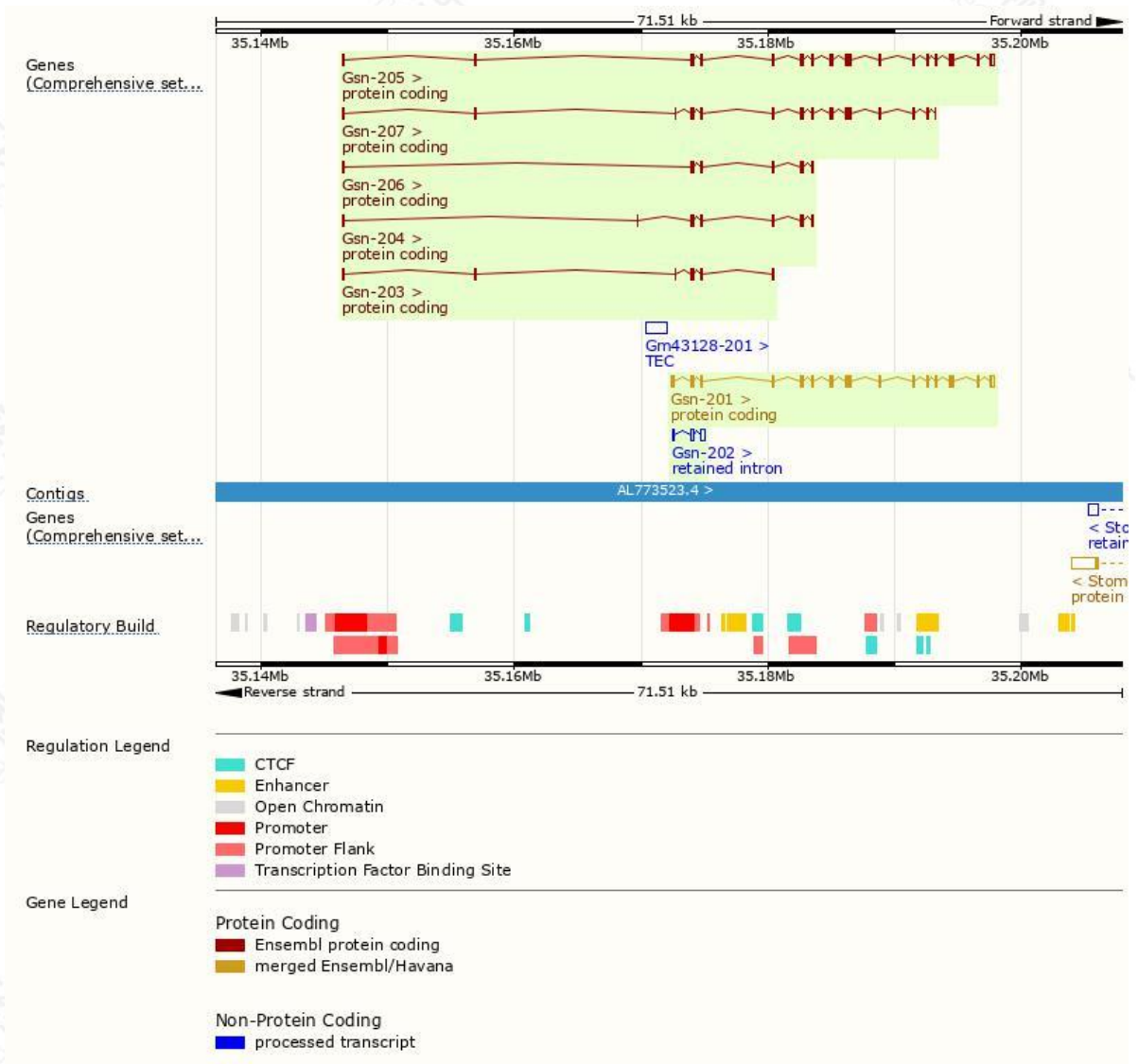
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gsn-201	ENSMUST00000028239.8	2653	780aa	Protein coding	CCDS15960		TSL:1 , GENCODE basic ,
Gsn-205	ENSMUST000000201185.4	2607	731aa	Protein coding	CCDS79785		TSL:1 , GENCODE basic , APPRIS P1 ,
Gsn-207	ENSMUST000000202990.4	1925	568aa	Protein coding	-		CDS 3' incomplete , TSL:5 ,
Gsn-204	ENSMUST000000142324.8	883	251aa	Protein coding	-		CDS 3' incomplete , TSL:5 ,
Gsn-206	ENSMUST000000202899.4	842	251aa	Protein coding	-		CDS 3' incomplete , TSL:3 ,
Gsn-203	ENSMUST000000139867.5	646	166aa	Protein coding	-		CDS 3' incomplete , TSL:5 ,
Gsn-202	ENSMUST000000124323.5	646	No protein	Retained intron	-		TSL:2 ,

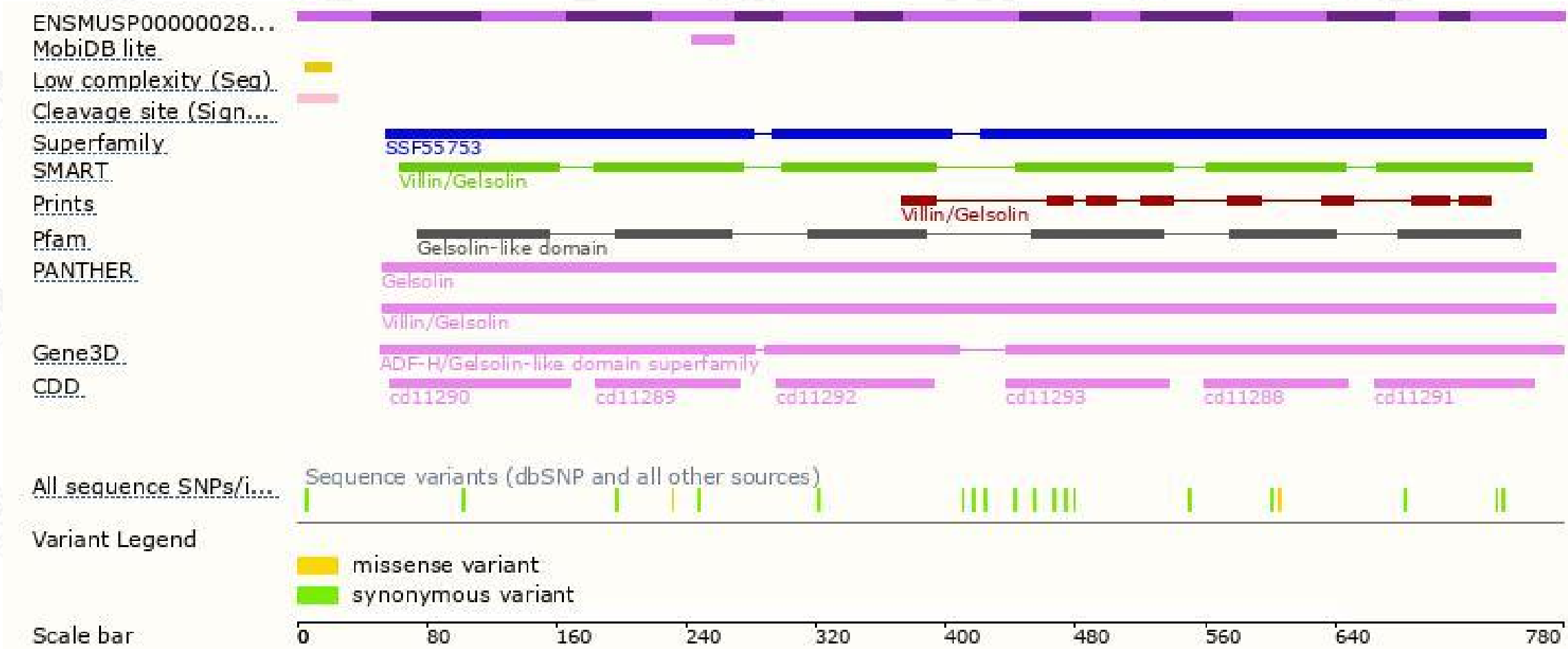
The strategy is based on the design of *Gsn-201* transcript,the transcription is shown below:



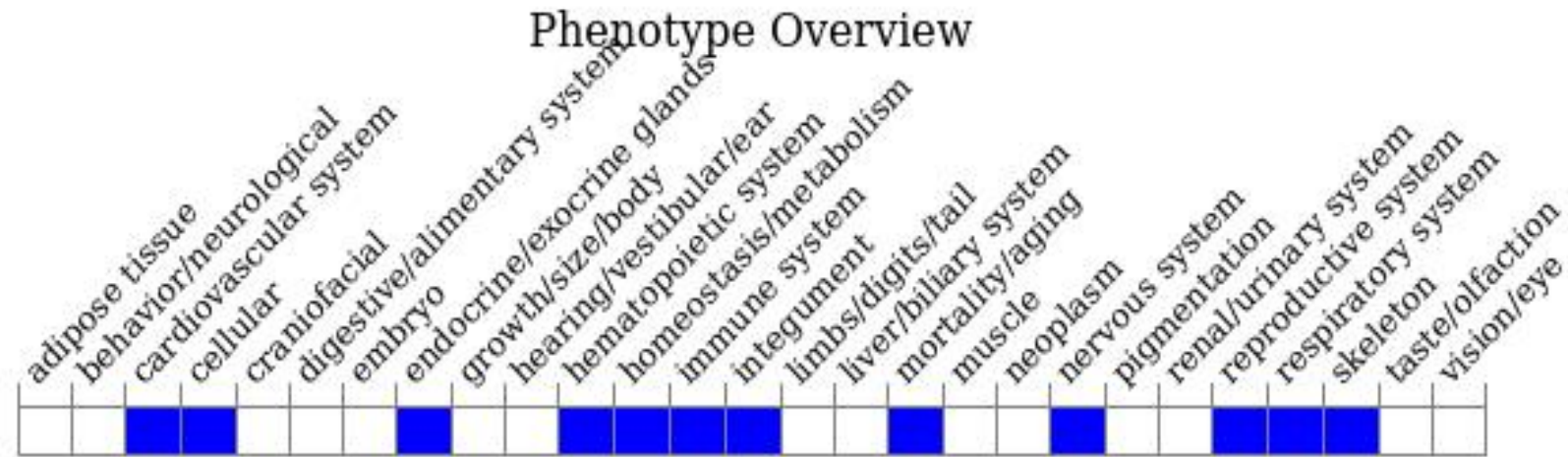
Genomic location distribution



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 disruptions in this gene display abnormalities in the immune system, platelet and platelet function, bone density, nervous and circulatory system. In addition, there are background related effects on viability and mammary gland development.

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

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