

Serpina7 Cas9-CKO Strategy

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Project Overview

Project Name

Serpina7

Project type

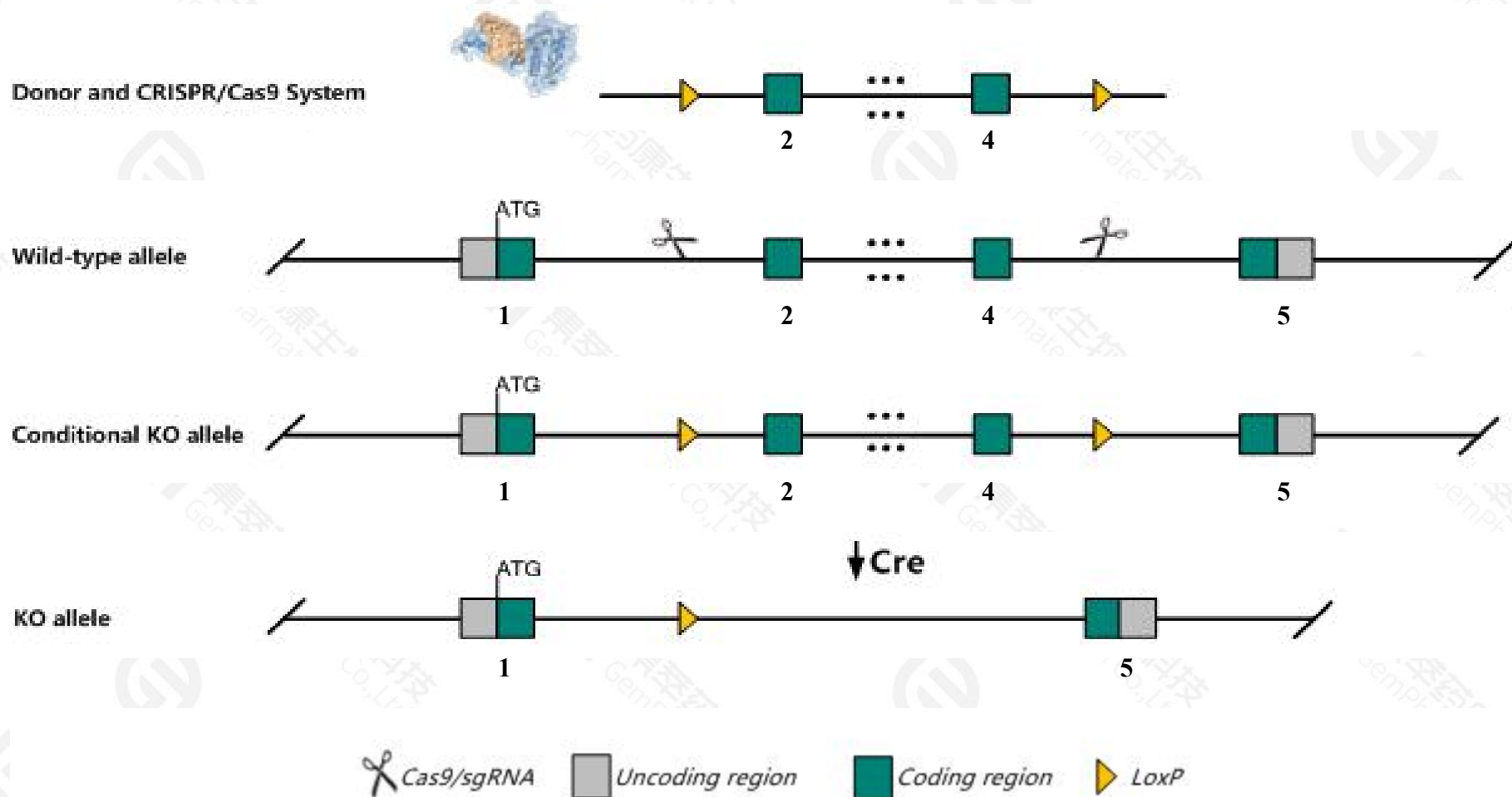
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Serpina7* gene. The schematic diagram is as follows:



Technical routes

- The *Serpina7* gene has 3 transcripts. According to the structure of *Serpina7* gene, exon2-exon4 of *Serpina7*-201(ENSMUST00000033626.15) transcript is recommended as the knockout region. The region contains 1070bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Serpina7* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor 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.

- The *Serpina7* gene is located on the ChrX. 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)

Serpina7 serine (or cysteine) peptidase inhibitor, clade A (alpha-1 antiproteinase, antitrypsin), member 7 [Mus musculus (house mouse)]

Gene ID: 331535, updated on 17-Dec-2020

Summary



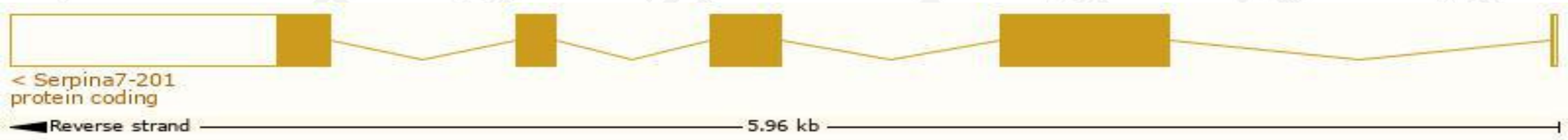
Official Symbol	Serpina7 provided by MGI
Official Full Name	serine (or cysteine) peptidase inhibitor, clade A (alpha-1 antiproteinase, antitrypsin), member 7 provided by MGI
Primary source	MGI:MGI:3041197
See related	Ensembl:ENSMUSG00000031271
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	C730040N12Rik, Tbg
Expression	Biased expression in liver E18 (RPKM 13.9), liver E14.5 (RPKM 1.1) and 2 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

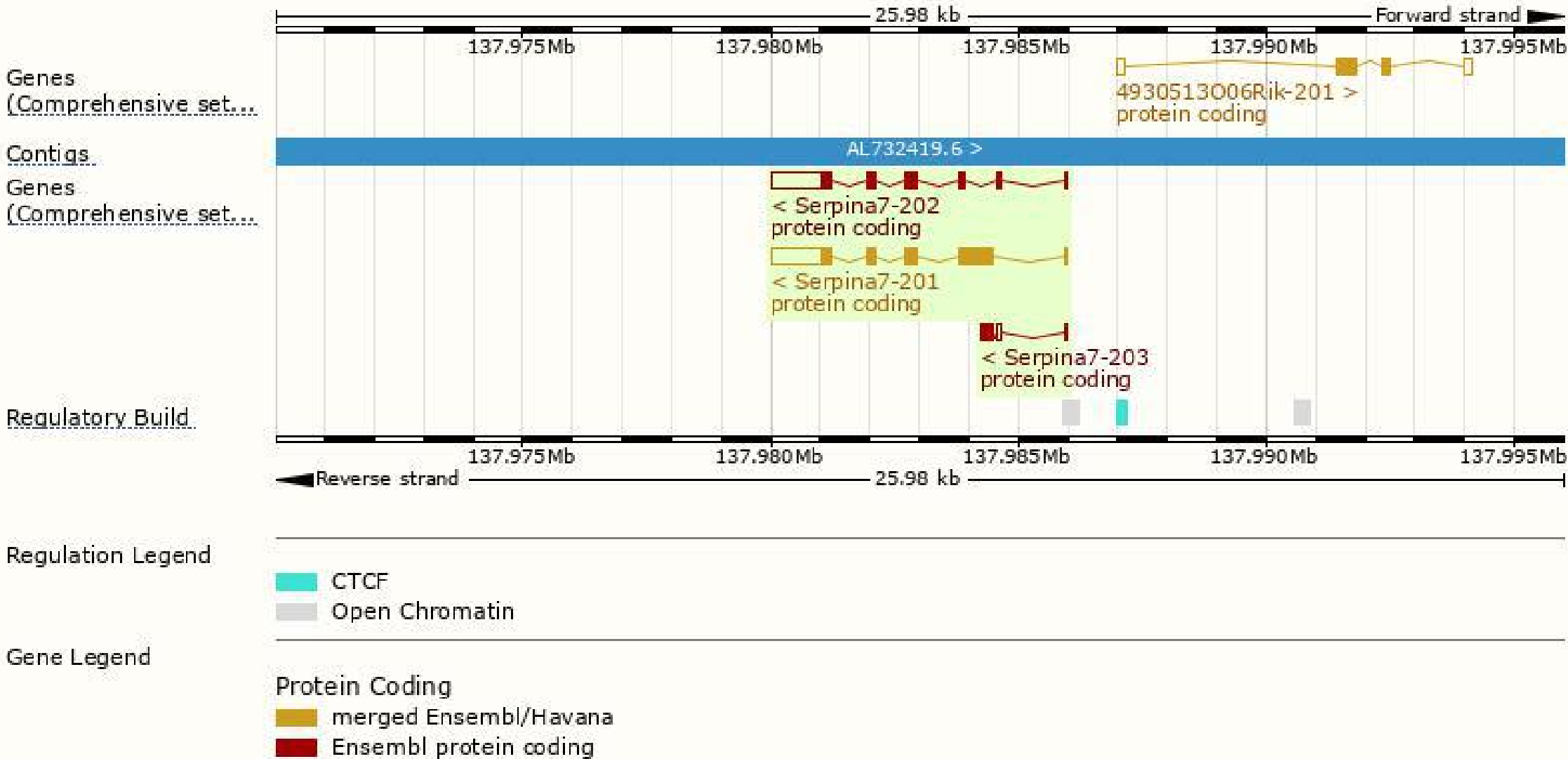
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Serpina7-201	ENSMUST00000033626.15	2330	426aa	Protein coding	CCDS53200		TSL:1 , GENCODE basic , APPRIS P1 ,
Serpina7-202	ENSMUST00000060824.4	1895	287aa	Protein coding	-		TSL:1 , GENCODE basic ,
Serpina7-203	ENSMUST00000152457.2	379	72aa	Protein coding	-		CDS 3' incomplete , TSL:2 ,

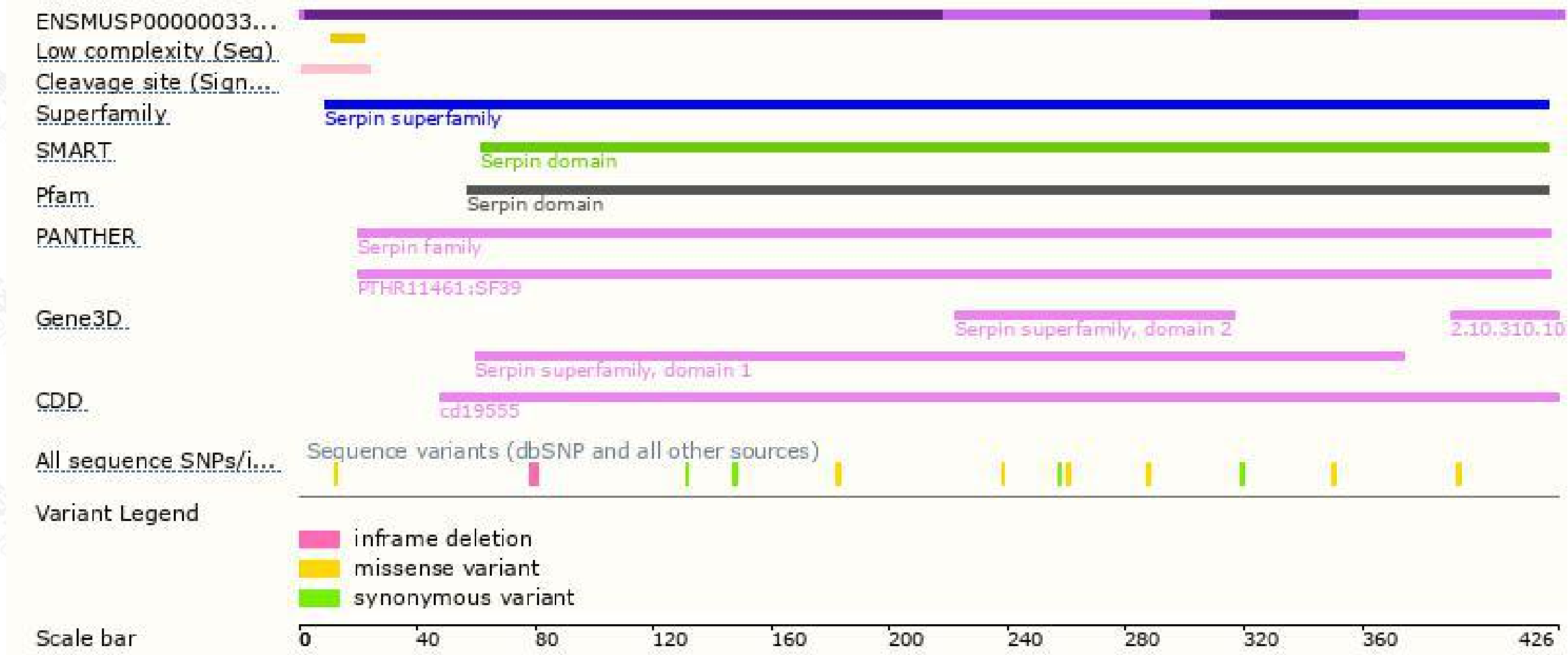
The strategy is based on the design of *Serpina7-201* transcript,the transcription is shown below:



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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