Snrpa Cas9-CKO Strategy

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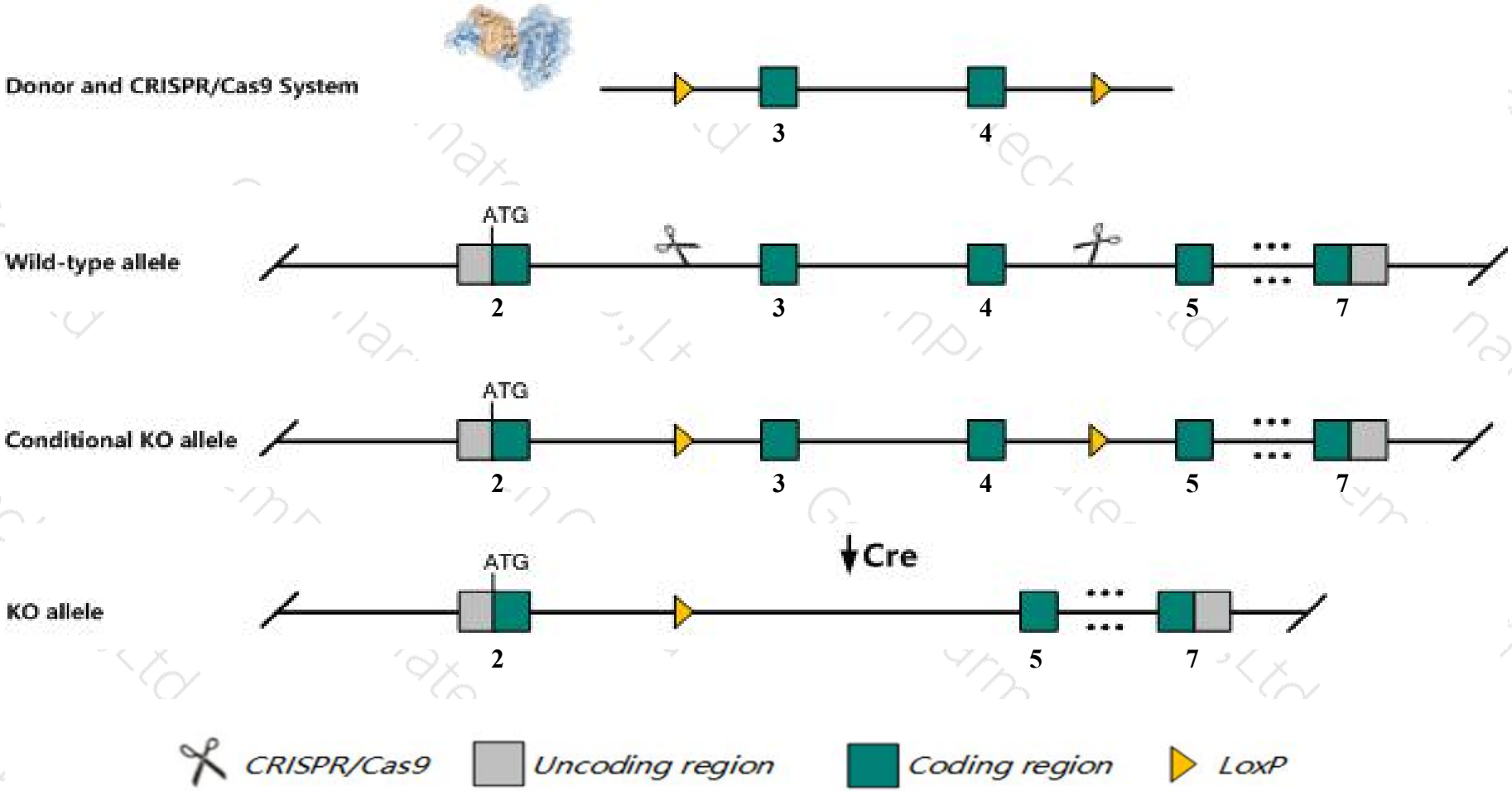
Project Overview

Project Name	***Snrpa***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

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



Technical routes

- The *Snrpa* gene has 7 transcripts. According to the structure of *Snrpa* gene, exon3-exon4 of *Snrpa-201* (ENSMUST00000080356.9) transcript is recommended as the knockout region.The region contains 350bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Snrpa* 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 floxed region is near to the N-terminal of *BC024978* gene,this strategy may influence the regulatory function of the N-terminal of *BC024978* gene.

- Transcript Snrpa-205&207 may not be affected.

- The *Snrpa* gene is located on the Chr7. 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）

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Snrpa small nuclear ribonucleoprotein polypeptide A [*Mus musculus* (house mouse)]

Gene ID: 53607, updated on 12-Aug-2019

Summary

Official Symbol	Snrpa provided by MGI
Official Full Name	small nuclear ribonucleoprotein polypeptide A provided by MGI
Primary source	MGI:MGI:1855690
See related	Ensembl:ENSMUSG00000061479
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	U1A; U1-A; Rnu1a1; Rnu1a-1; C430021M15Rik
Expression	Ubiquitous expression in ovary adult (RPKM 95.1), limb E14.5 (RPKM 88.1) and 28 other tissues See more
Orthologs	human all

Genomic context

Location: 7; 7 A3

See Snrpa in Genome Data Viewer

Exon count: 7

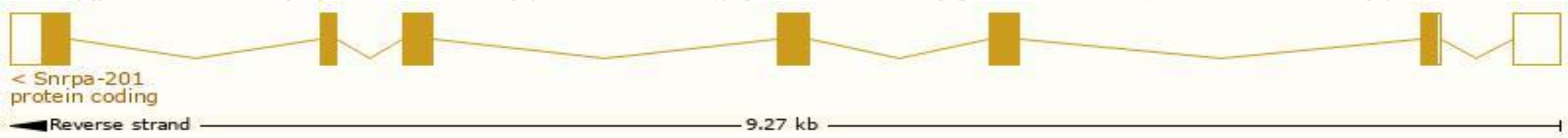
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	7	NC_000073.6 (27187006..27196271, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	7	NC_000073.5 (27972025..27981290, complement)

Transcript information（Ensembl）

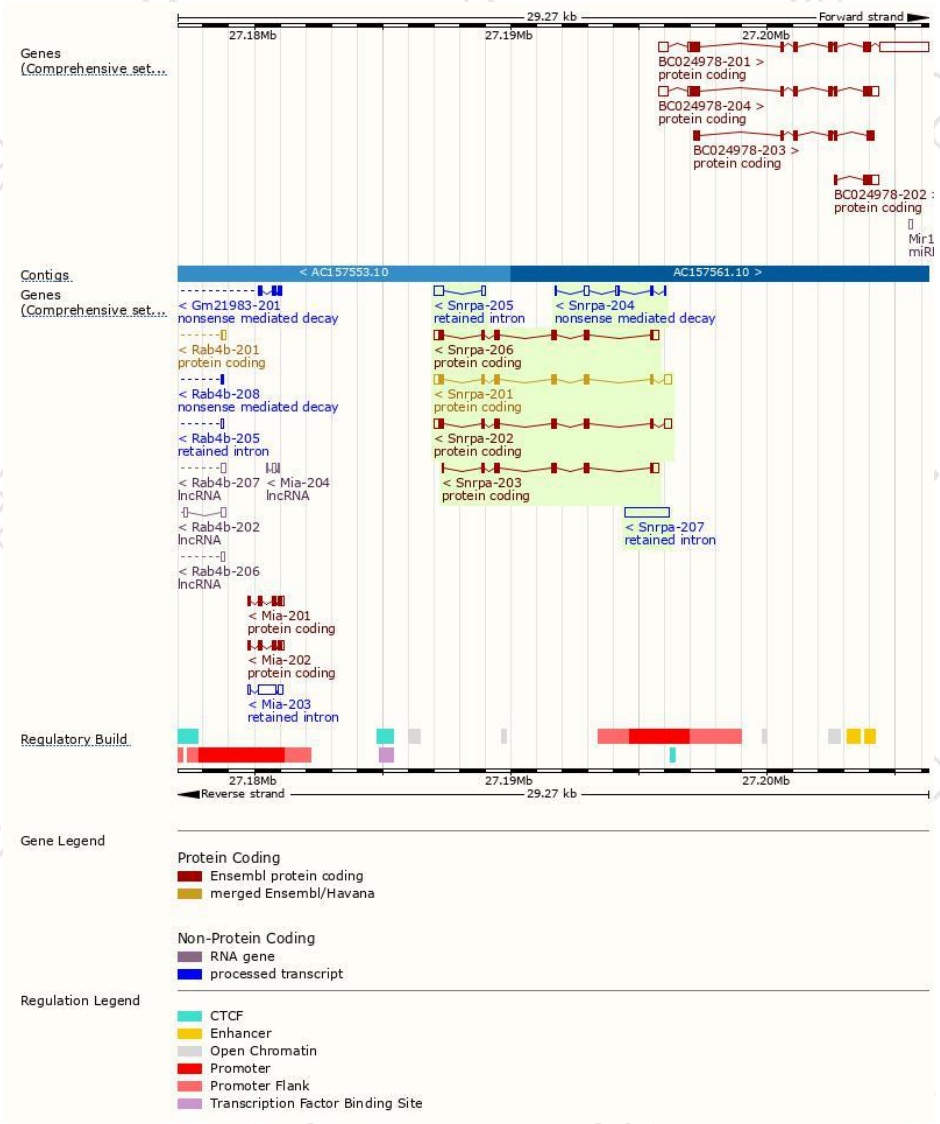
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Snrpa-201	ENSMUST00000080356.9	1365	287aa	Protein coding	CCDS21014	Q62189	TSL:1 GENCODE basic APPRIS P1
Snrpa-202	ENSMUST00000122202.7	1336	287aa	Protein coding	CCDS21014	Q62189	TSL:1 GENCODE basic APPRIS P1
Snrpa-206	ENSMUST00000163311.8	1288	287aa	Protein coding	CCDS21014	Q62189	TSL:2 GENCODE basic APPRIS P1
Snrpa-203	ENSMUST00000126211.1	968	247aa	Protein coding	-	D3Z0S6	CDS 3' incomplete TSL:2
Snrpa-204	ENSMUST00000141378.1	510	44aa	Nonsense mediated decay	-	D6RI83	TSL:3
Snrpa-207	ENSMUST00000206439.1	1690	No protein	Retained intron	-	-	TSL:NA
Snrpa-205	ENSMUST00000148491.1	509	No protein	Retained intron	-	-	TSL:1

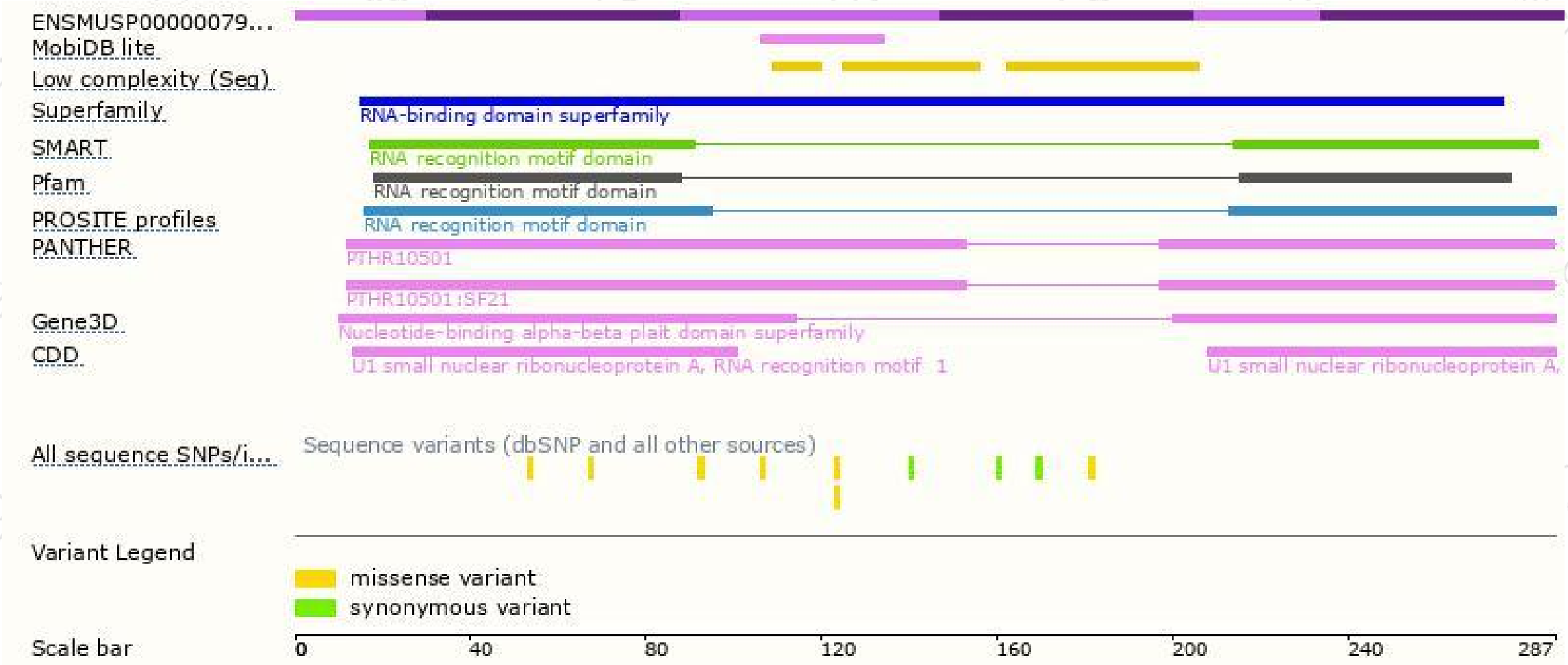
The strategy is based on the design of *Snrpa-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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