Skp1a Cas9-CKO Strategy

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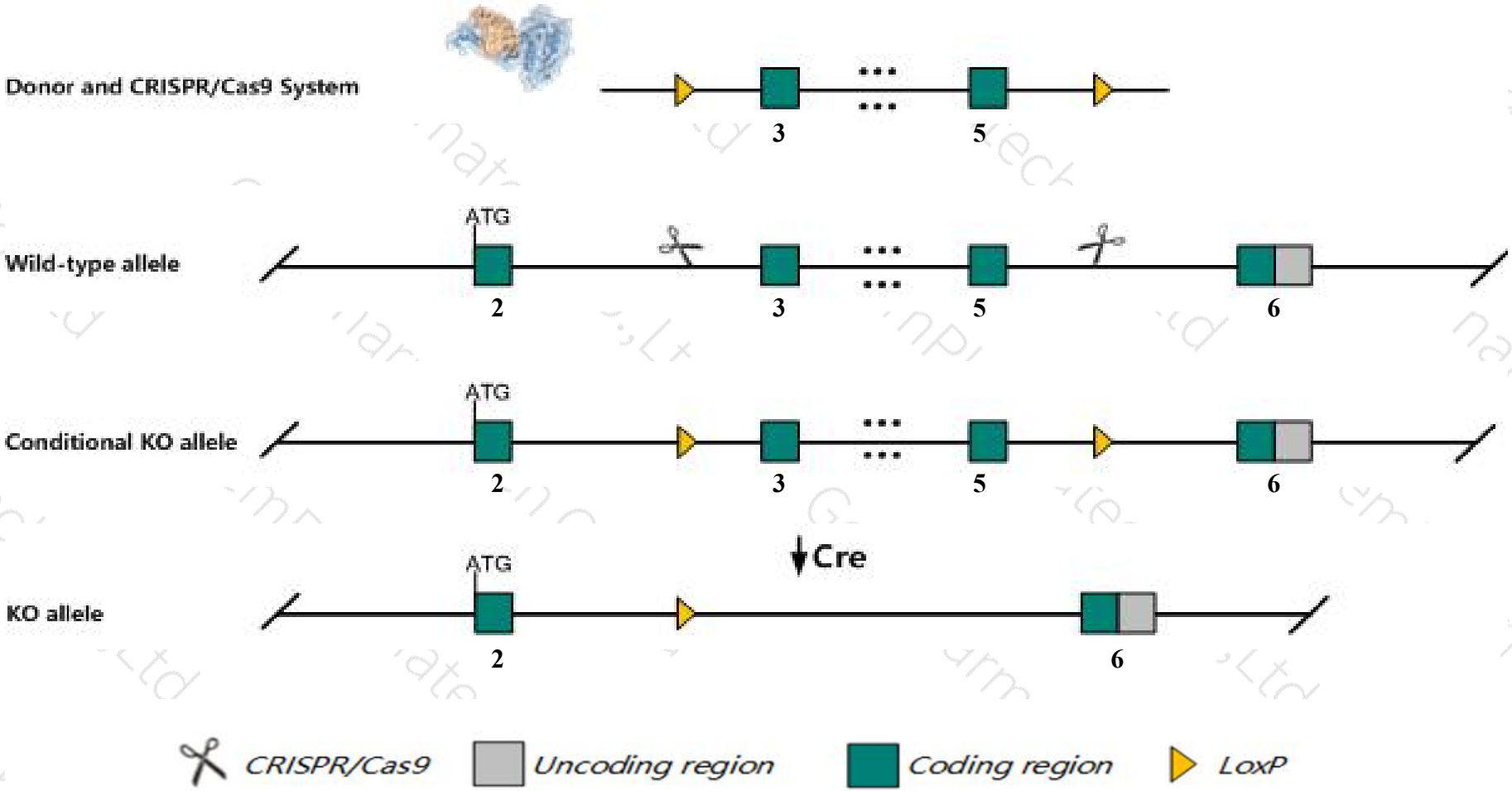
Project Overview

Project Name	***Skp1a***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Skp1a* gene. The schematic diagram is as follows:



Technical routes

- The *Skp1a* gene has 6 transcripts. According to the structure of *Skp1a* gene, exon3-exon5 of *Skp1a-203* (ENSMUST00000109072.1) transcript is recommended as the knockout region.The region contains 359bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Skp1a* 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 *Skp1a* gene is located on the Chr11. 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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Skp1a S-phase kinase-associated protein 1A [*Mus musculus* (house mouse)]

Gene ID: 21402, updated on 11-Sep-2019

Summary

Official Symbol	Skp1a provided by MGI
Official Full Name	S-phase kinase-associated protein 1A provided by MGI
Primary source	MGI:MGI:103575
See related	Ensembl:ENSMUSG00000036309
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	OCP2; SKP1; p19A; 15kDa; EMC19; OCP-II; Tceb1l; p19Skp1; 2610043E24Rik; 2610206H23Rik
Expression	Broad expression in CNS E18 (RPKM 68.9), CNS E11.5 (RPKM 64.4) and 22 other tissues See more
Orthologs	human all

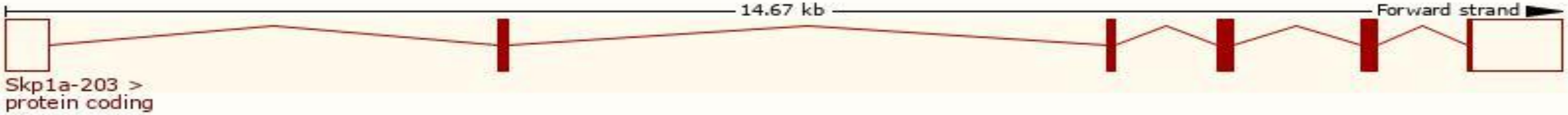
Chromosome 11 - NC_000077.6

Transcript information（Ensembl）

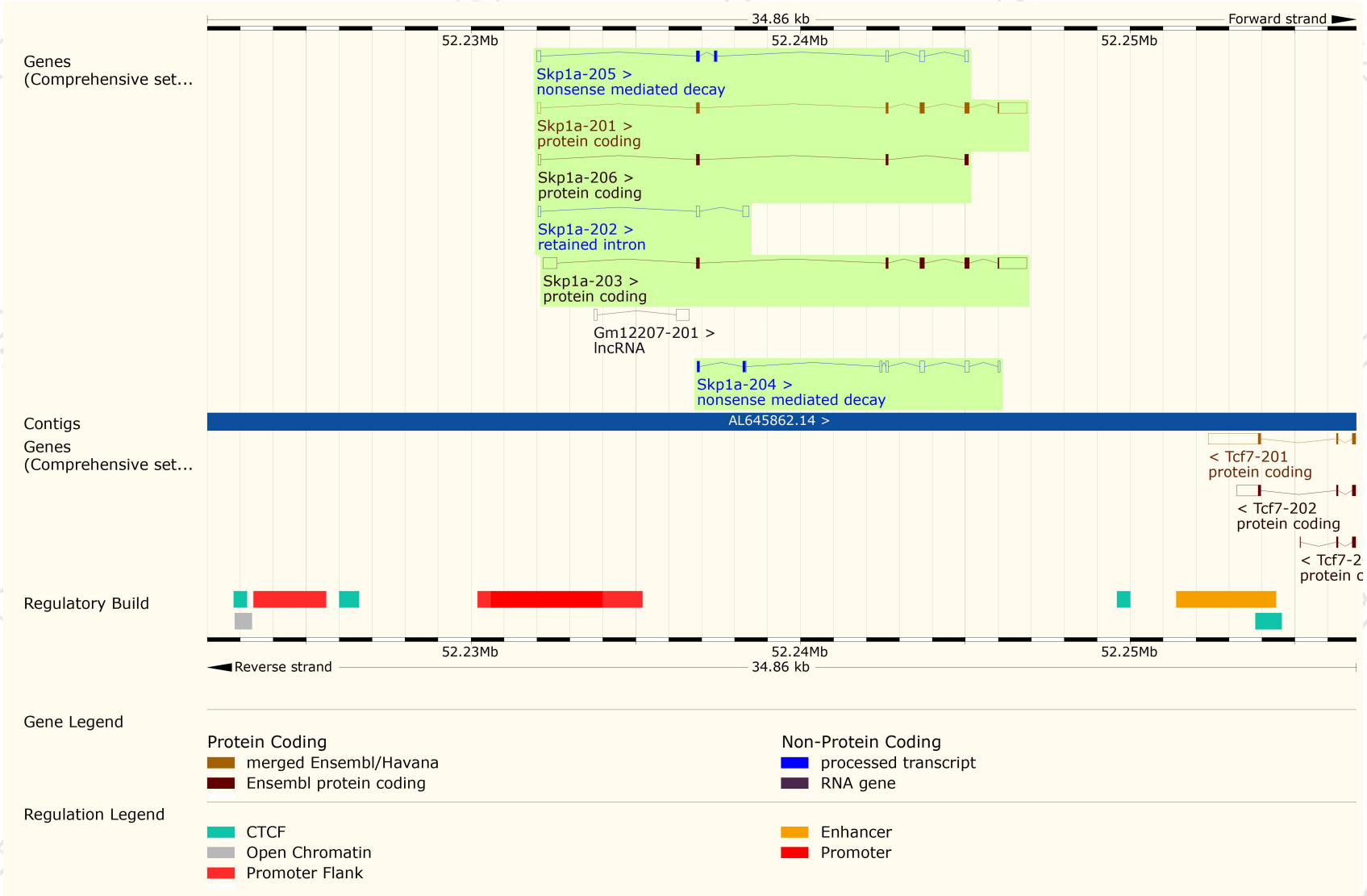
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Skp1a-203	ENSMUST00000109072.1	1754	163aa	ENSMUSP00000104700.1	Protein coding	CCDS24669	Q5SUR3 Q9WTX5	TSL:5 GENCODE basic APPRIS P1
Skp1a-201	ENSMUST00000037324.11	1440	163aa	ENSMUSP00000038744.5	Protein coding	CCDS24669	Q5SUR3 Q9WTX5	TSL:1 GENCODE basic APPRIS P1
Skp1a-206	ENSMUST00000166537.7	370	96aa	ENSMUSP00000131833.1	Protein coding	-	E9PUV4	CDS 3' incomplete TSL:3
Skp1a-204	ENSMUST00000116595.2	667	50aa	ENSMUSP00000112294.2	Nonsense mediated decay	-	F6TGP8	CDS 5' incomplete TSL:3
Skp1a-205	ENSMUST00000147684.7	642	56aa	ENSMUSP00000129711.1	Nonsense mediated decay	-	E9Q3Q7	TSL:3
Skp1a-202	ENSMUST00000093121.12	353	No protein	-	Retained intron	-	-	TSL:3

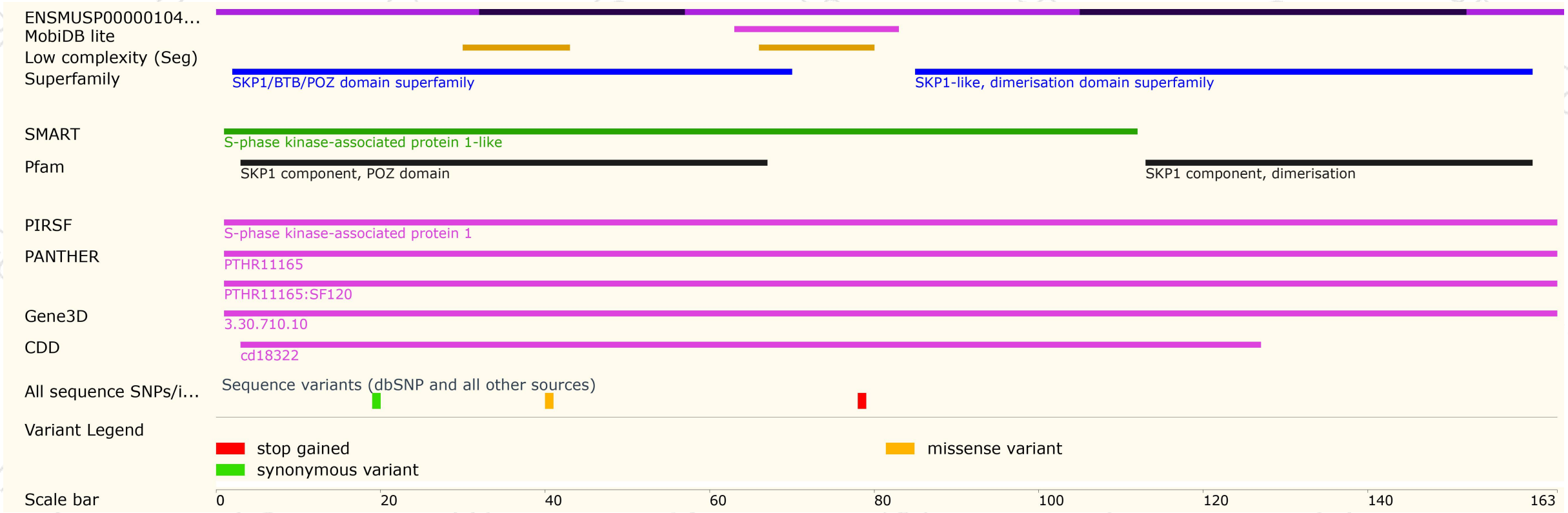
The strategy is based on the design of *Skp1a-203* transcript.The transcription is shown below



Genomic location distribution



Protein domain



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

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