

Senp6 Cas9-CKO Strategy

Designer:

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Design Date:

2118/6/4

Project Overview

Project Name

Senp6

Project type

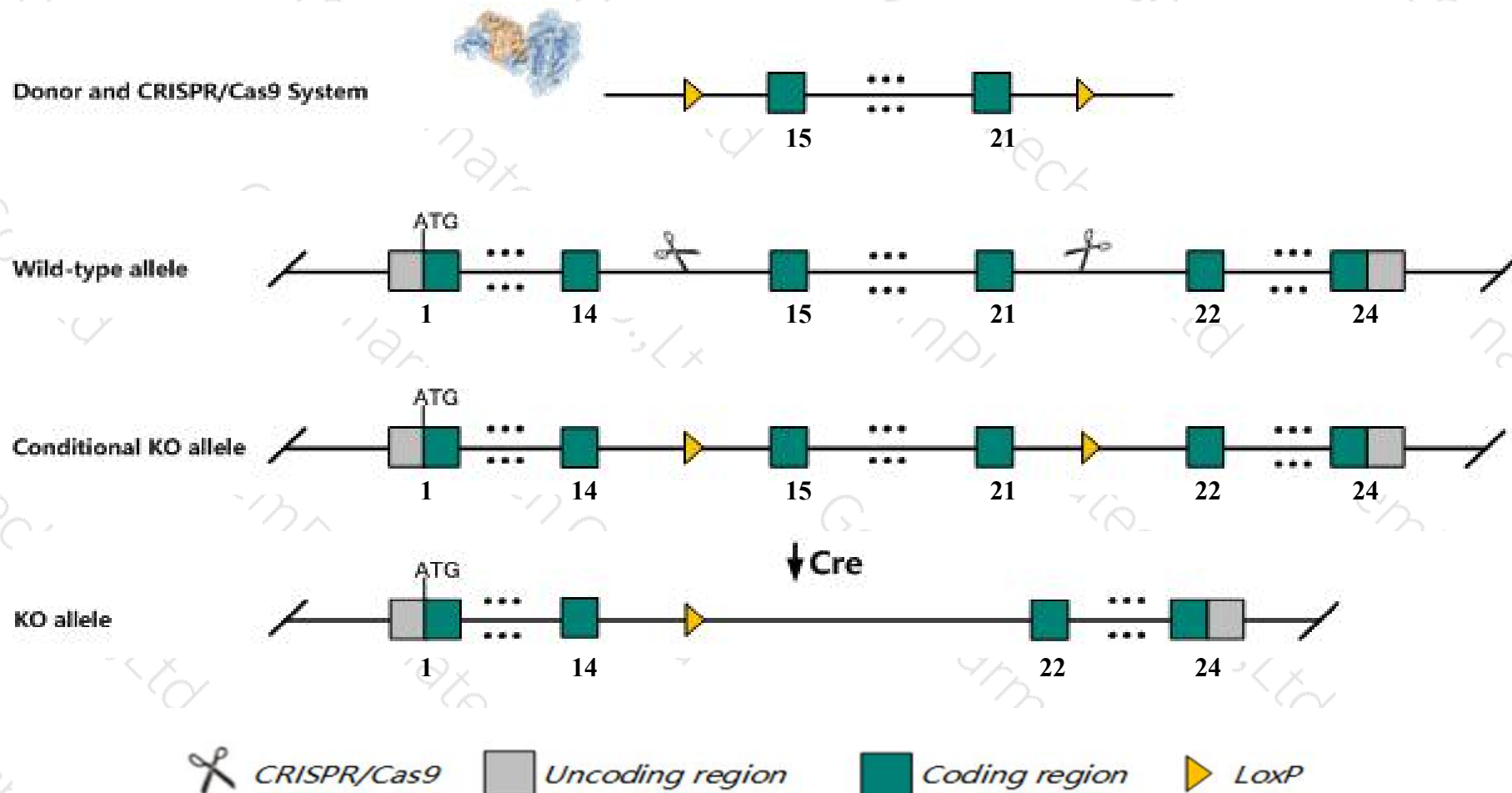
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Senp6* gene. The schematic diagram is as follows:



- The *Senp6* gene has 15 transcripts. According to the structure of *Senp6* gene, exon15-exon21 of *Senp6*-203 (ENSMUST00000165607.8) transcript is recommended as the knockout region. The region contains 1058bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Senp6* gene. The brief process is as follows: gRNA was transcribed in vitro, donor was constructed. Cas9, gRNA 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

- According to the existing MGI data, Mice homozygous for a gene trap insertion exhibit prenatal lethality.
- Both transcripts *Senp6-213* and *Senp6-214* are incomplete, so the effect on them are unknown.
- The *Senp6* gene is located on the Chr9. 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)

Senp6 SUMO/sentrin specific peptidase 6 [*Mus musculus* (house mouse)]

Gene ID: 215351, updated on 12-Aug-2019

Summary

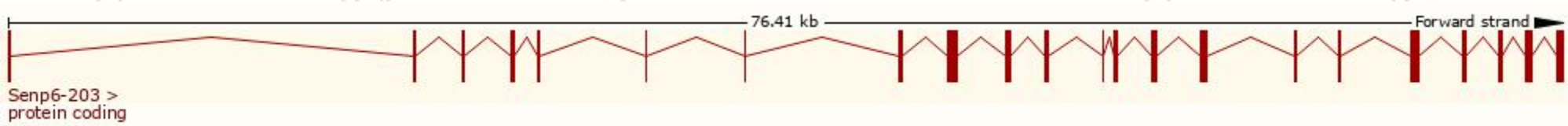
Official Symbol	Senp6 provided by MGI
Official Full Name	SUMO/sentrin specific peptidase 6 provided by MGI
Primary source	MGI:MGI:1922075
See related	Ensembl:ENSMUSG00000034252
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Susp1; mKIAA0797; 2810017C20Rik; E130319N12Rik
Expression	Ubiquitous expression in CNS E11.5 (RPKM 16.8), CNS E14 (RPKM 11.2) and 27 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

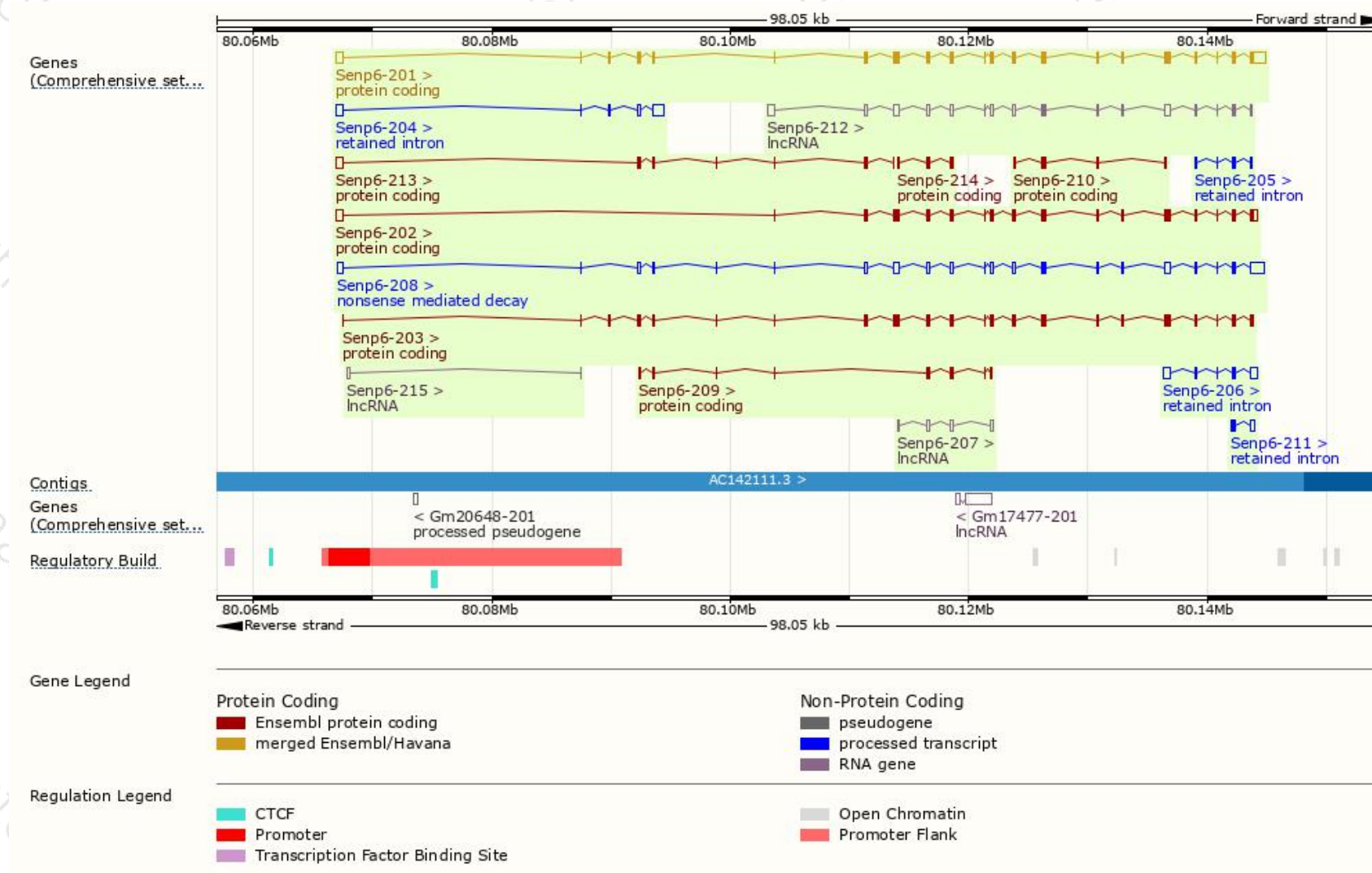
The gene has 15 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Senp6-201	ENSMUST00000037484.14	5111	1132aa	Protein coding	CCDS40705	Q6P7W0	TSL:1 GENCODE basic APPRIS P3
Senp6-203	ENSMUST00000165607.8	3495	1139aa	Protein coding	CCDS81040	F6Z9A1	TSL:1 GENCODE basic APPRIS ALT2
Senp6-202	ENSMUST00000164859.7	3853	966aa	Protein coding	-	Q6P7W0	TSL:1 GENCODE basic APPRIS ALT2
Senp6-213	ENSMUST00000176640.7	1150	131aa	Protein coding	-	H3BKR4	CDS 3' incomplete TSL:5
Senp6-209	ENSMUST00000176360.7	855	285aa	Protein coding	-	H3BJS8	CDS 5' and 3' incomplete TSL:5
Senp6-210	ENSMUST00000176527.1	612	204aa	Protein coding	-	H3BLA9	CDS 5' and 3' incomplete TSL:2
Senp6-214	ENSMUST00000176648.1	596	179aa	Protein coding	-	H3BK20	CDS 5' incomplete TSL:2
Senp6-208	ENSMUST00000175999.7	4706	48aa	Nonsense mediated decay	-	H3BK12	TSL:1
Senp6-204	ENSMUST00000175673.1	1916	No protein	Retained intron	-	-	TSL:1
Senp6-206	ENSMUST00000175758.7	1445	No protein	Retained intron	-	-	TSL:1
Senp6-211	ENSMUST00000176563.1	614	No protein	Retained intron	-	-	TSL:2
Senp6-205	ENSMUST00000175722.7	492	No protein	Retained intron	-	-	TSL:2
Senp6-212	ENSMUST00000176607.7	3319	No protein	lncRNA	-	-	TSL:1
Senp6-207	ENSMUST00000175910.1	662	No protein	lncRNA	-	-	TSL:3
Senp6-215	ENSMUST00000177544.1	341	No protein	lncRNA	-	-	TSL:3

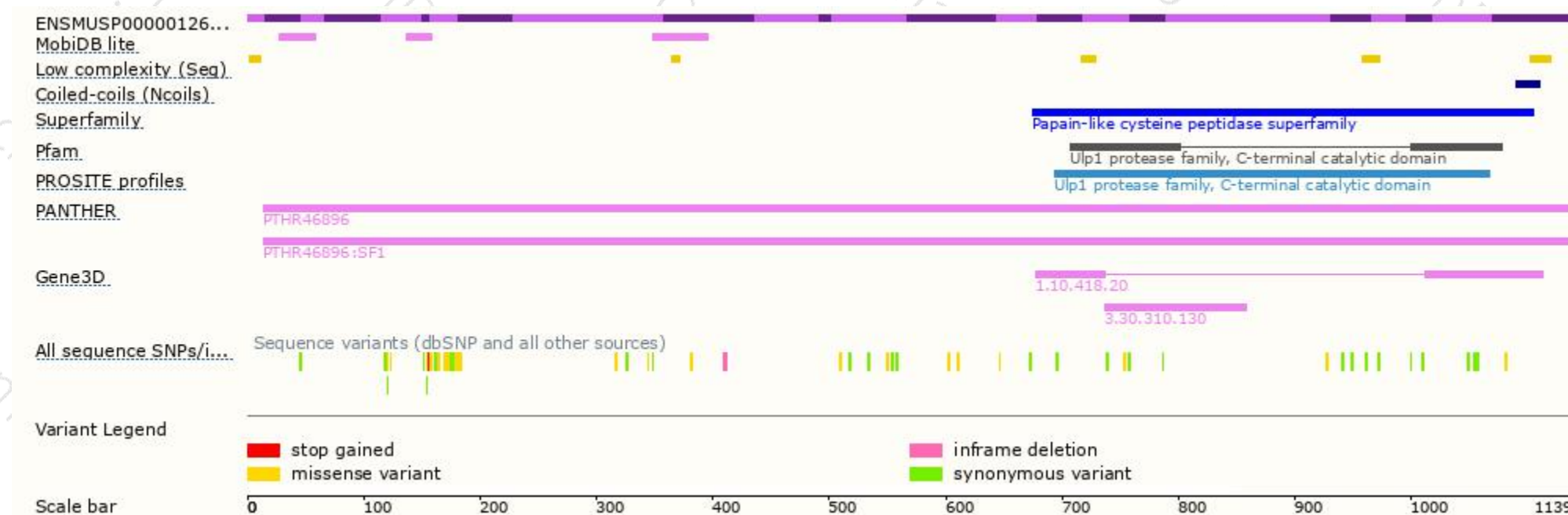
The strategy is based on the design of *Senp6-203*transcript,The transcription is shown below



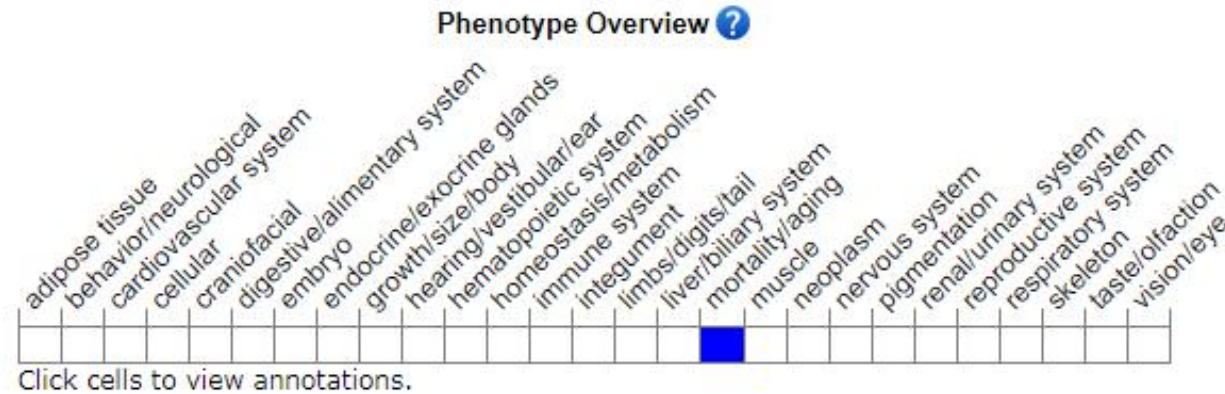
Genomic location distribution



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 a gene trap insertion exhibit prenatal lethality.

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

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