# *Senp6* Cas9-KO Strategy

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**Design Date:** 2018/6/4

# Project Overview

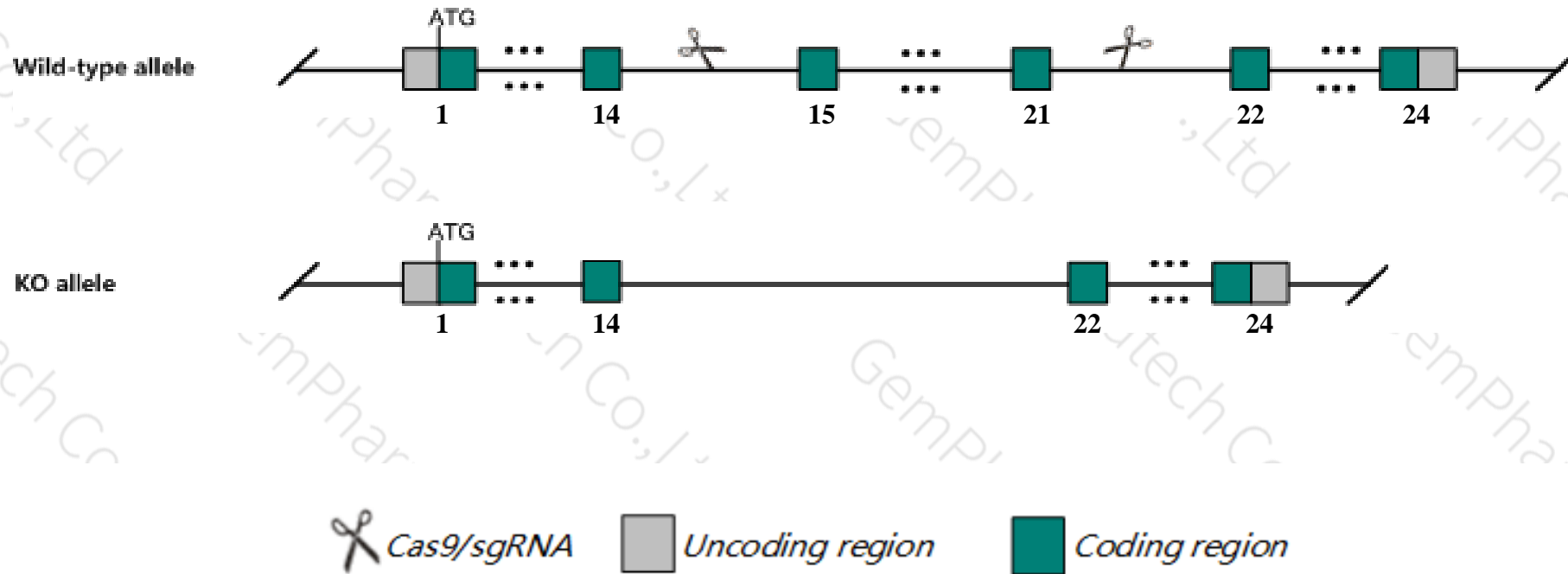| | |
|---|---|
| **Project Name** | *Senp6* |
| **Project type** | **Cas9-KO** |
| **Strain background** | **C57BL/6JGpt** |

# Knockout strategy

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

# Technical routes

➢ The *Senp6* gene has 15 transcripts. According to the structure of *Senp6* gene, exon14-exon20 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: 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.

# 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology 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 | - | H3BKI2 | 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
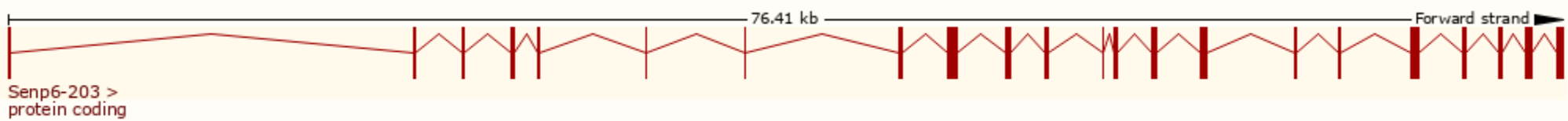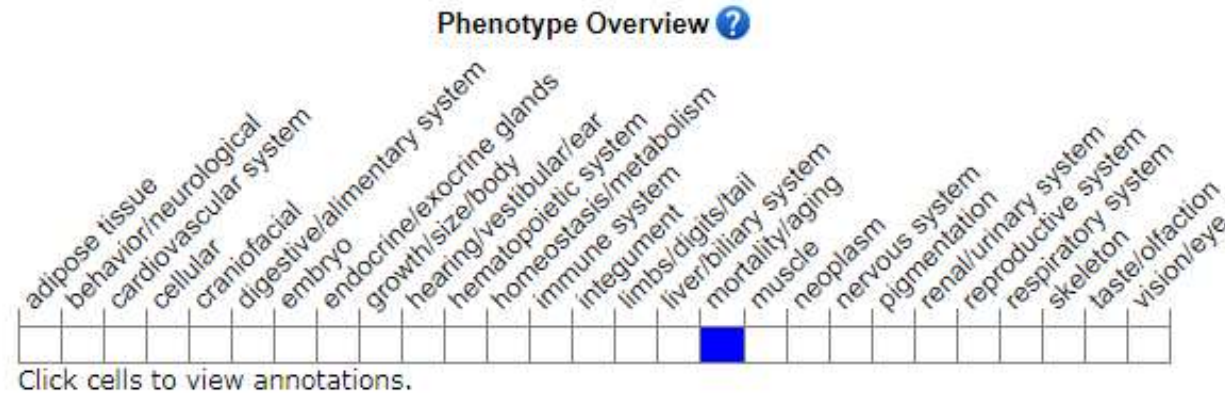
# Genomic location distribution
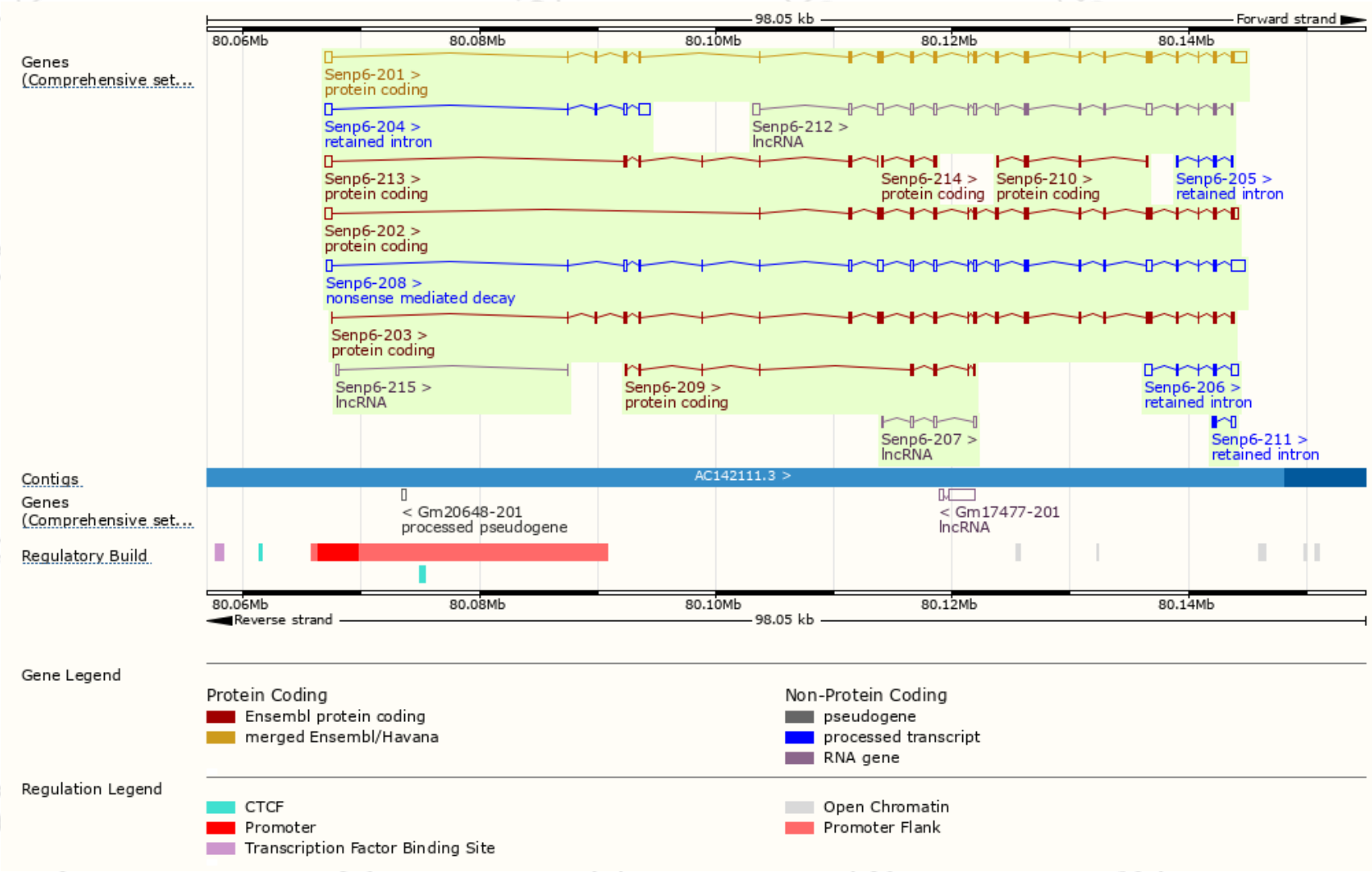
# Protein domain
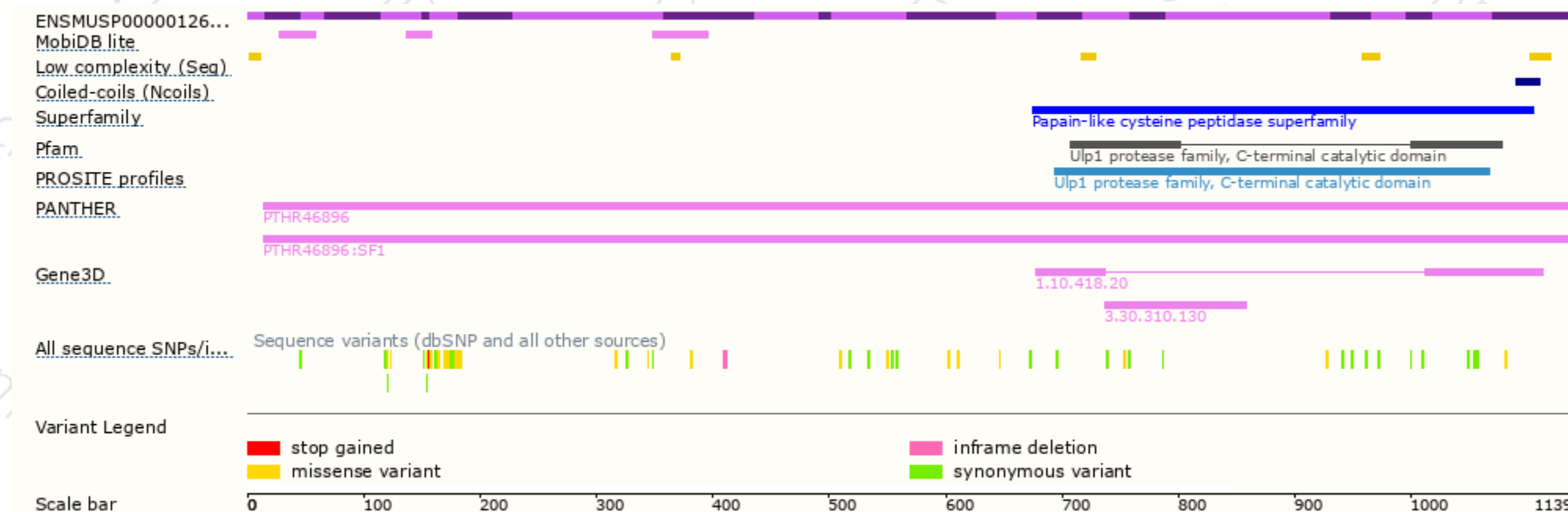
# Mouse phenotype description(MGI )



*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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