

# Senp5 Cas9-KO Strategy

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# Overview

## Target Gene Name

- Senp5

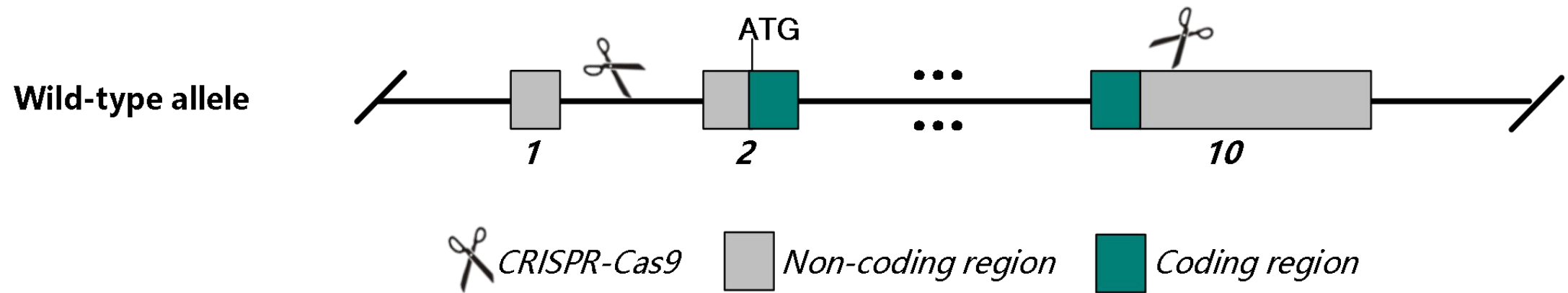
## Project Type

- Cas9-KO

## Genetic Background

- C57BL/6JGpt

# Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Senp5* gene.

# Technical Information

- The *Senp5* gene has 5 transcripts. According to the structure of *Senp5* gene, exon2-10 of *Senp5*-205 (ENSMUST00000231360.2) transcript is recommended as the knockout region. The region contains all of coding sequences. Knocking out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Senp5* gene. The brief process is as follows: gRNAs were transcribed in vitro. Cas9 and gRNAs 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 on-target amplicon sequencing. A stable F1-generation mouse strain was obtained by mating positive F0-generation mice with C57BL/6JGpt mice and confirmation of the desired mutant allele was carried out by PCR and on-target amplicon sequencing.

# Gene Information

## Senp5 SUMO/sentrin specific peptidase 5 [ *Mus musculus* (house mouse) ]

Gene ID: 320213, updated on 13-Aug-2022

[Download Datasets](#)

### Summary

<b>Official Symbol</b>	Senp5 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	SUMO/sentrin specific peptidase 5 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:2443596</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000022772</a> <a href="#">AllianceGenome:MGI:2443596</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	VALIDATED
<b>Organism</b>	<a href="#">Mus musculus</a>
<b>Lineage</b>	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
<b>Also known as</b>	SMT3IP3; 6230429P13Rik; A730063F07Rik
<b>Summary</b>	Predicted to enable SUMO-specific endopeptidase activity. Predicted to be involved in protein desumoylation. Predicted to act upstream of or within cell division. Predicted to be located in centrosome; cytosol; and nuclear lumen. Predicted to be active in nucleus. Is expressed in ganglia and heart. Orthologous to human SENP5 (SUMO specific peptidase 5). [provided by Alliance of Genome Resources, Apr 2022]
<b>Expression</b>	Ubiquitous expression in placenta adult (RPKM 6.7), CNS E11.5 (RPKM 4.9) and 28 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>
<b>NEW</b>	Try the new <a href="#">Gene table</a> Try the new <a href="#">Transcript table</a>

### Genomic context

Location: 16; 16 B2

Exon count: 14

See Senp5 in [Genome Data Viewer](#)

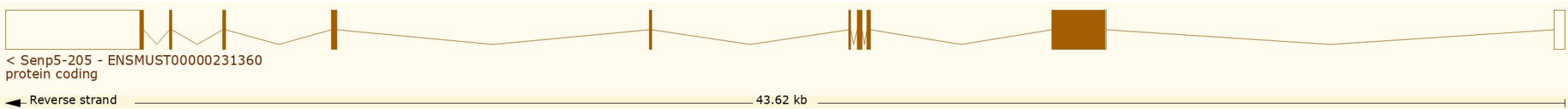
Source: <https://www.ncbi.nlm.nih.gov/>

# Transcript Information

The gene has 5 transcripts, all transcripts are shown below:

Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags
<a href="#">ENSMUST00000231360.2</a>	Senp5-205	6332	<a href="#">749aa</a>	Protein coding	<a href="#">CCDS28111</a>	<a href="#">Q6NXL6</a>	Ensembl Canonical GENCODE basic APPRIS P1
<a href="#">ENSMUST0000023457.13</a>	Senp5-201	3370	<a href="#">749aa</a>	Protein coding	<a href="#">CCDS28111</a>	<a href="#">Q6NXL6</a>	GENCODE basic APPRIS P1 TSL:1
<a href="#">ENSMUST00000129900.2</a>	Senp5-202	1993	<a href="#">607aa</a>	Protein coding		<a href="#">F6S6C3</a>	TSL:1 CDS 5' incomplete
<a href="#">ENSMUST00000155515.8</a>	Senp5-204	983	<a href="#">210aa</a>	Nonsense mediated decay		<a href="#">F7A4L2</a>	TSL:3 CDS 5' incomplete
<a href="#">ENSMUST00000144320.2</a>	Senp5-203	2804	No protein	Retained intron		-	TSL:1

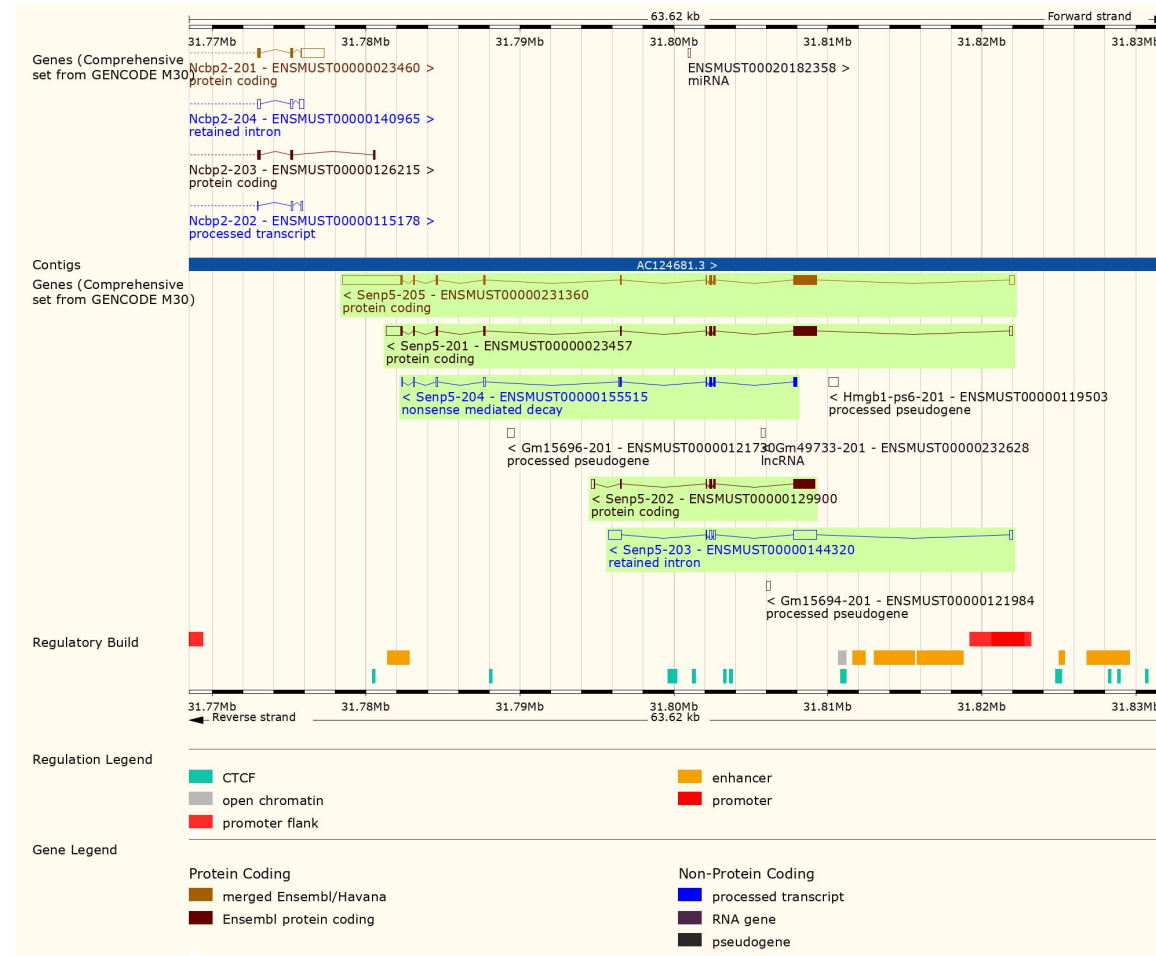
The strategy is based on the design of *Senp5-205* transcript, the transcription is shown below:



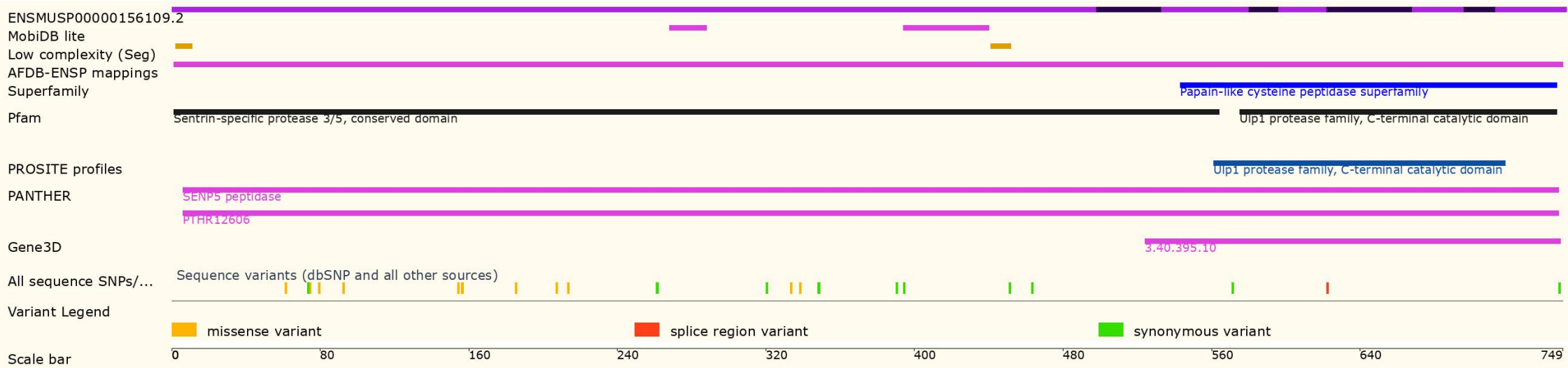
Source: <https://www.ensembl.org>



# Genomic Information



# Protein Information





# Important Information

- The effect of *Hmgb1-ps6-201* and *Ncbp2* genes is unknown.
- *Gm15696-201*, *Gm15694-201*, ENSMUST00020182358.1 and *Gm15696-201* genes will be deleted.
- *Senp5* is located on Chr16. If the knockout mice are crossed with other mouse strains to obtain double homozygous mutant offspring, please avoid the situation that the second gene is on the same chromosome.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risks of the mutation on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.