

***Senp3* Cas9-CKO Strategy**

Designer:

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Design Date:

2018/6/4

Project Overview

Project Name

Senp3

Project type

Cas9-CKO

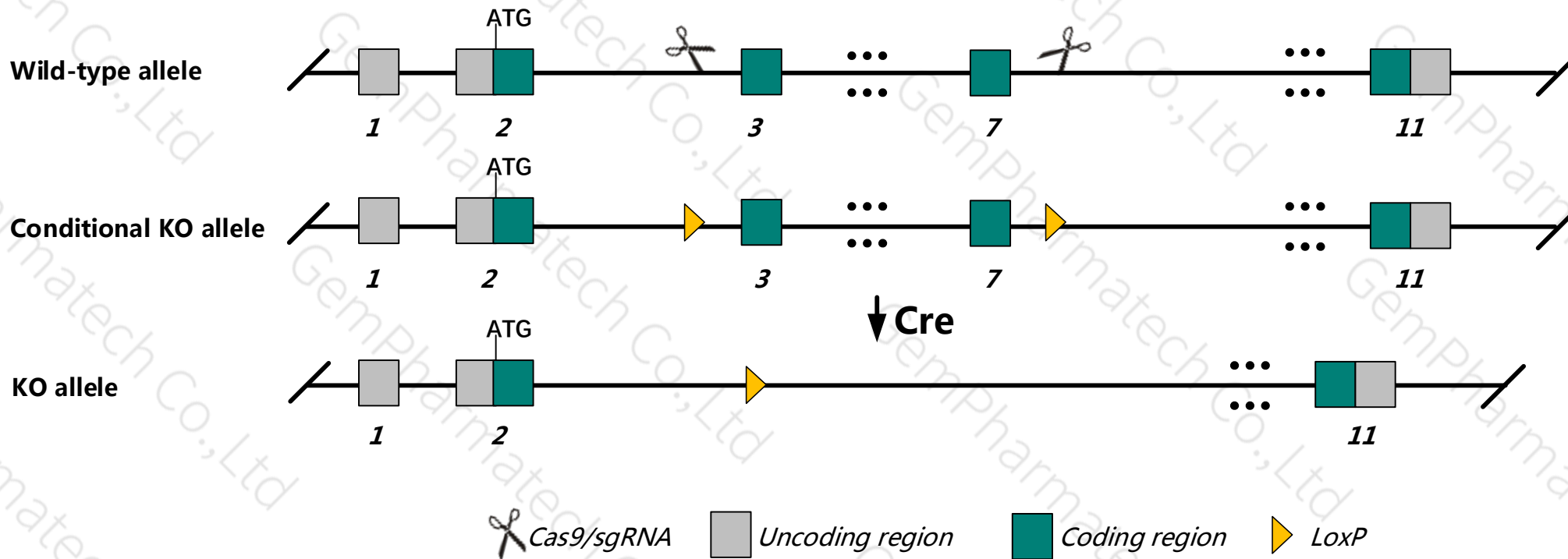
Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Senp3* gene. The schematic diagram is as follows:

Donor and CRISPR/Cas9 System



- The *Senp3* gene has 9 transcripts. According to the structure of *Senp3* gene, exon3~exon7 of *Senp3*-201 (ENSMUST00000005336.8) transcript is recommended as the knockout region. The region contains 626bp of coding region. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Senp3* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA 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 was 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.

- The *Senp3* 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)

Senp3 SUMO/sentrin specific peptidase 3 [*Mus musculus* (house mouse)]

Gene ID: 80886, updated on 21-Aug-2019

Summary

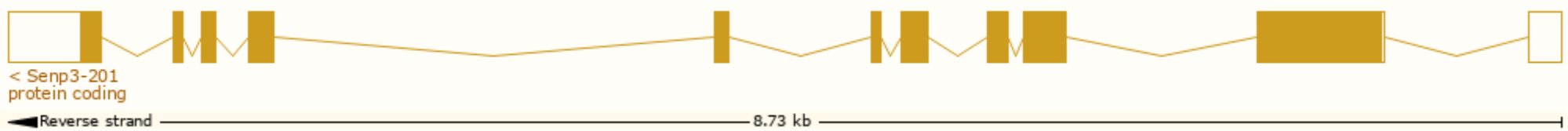
Official Symbol	Senp3 provided by MGI
Official Full Name	SUMO/sentrin specific peptidase 3 provided by MGI
Primary source	MGI:MGI:2158736
See related	Ensembl:ENSMUSG000000005204
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Smt3ip; Smt3ip1; AA408656
Expression	Ubiquitous expression in limb E14.5 (RPKM 28.8), CNS E18 (RPKM 23.8) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Senp3-201	ENSMUST00000005336.8	2313	568aa	Protein coding	CCDS24905	Q9EP97	TSL:1 GENCODE basic APPRIS P1
Senp3-202	ENSMUST000000066760.7	2219	568aa	Protein coding	CCDS24905	Q9EP97	TSL:1 GENCODE basic APPRIS P1
Senp3-206	ENSMUST00000134942.1	693	169aa	Protein coding	-	F6Z9L5	CDS 5' incomplete TSL:3
Senp3-203	ENSMUST00000123084.7	1164	No protein	Retained intron	-	-	TSL:2
Senp3-209	ENSMUST00000153516.7	860	No protein	Retained intron	-	-	TSL:2
Senp3-204	ENSMUST00000128355.1	614	No protein	Retained intron	-	-	TSL:2
Senp3-208	ENSMUST00000142206.1	387	No protein	Retained intron	-	-	TSL:2
Senp3-205	ENSMUST00000130440.1	161	No protein	Retained intron	-	-	TSL:5
Senp3-207	ENSMUST00000135372.1	517	No protein	lncRNA	-	-	TSL:3

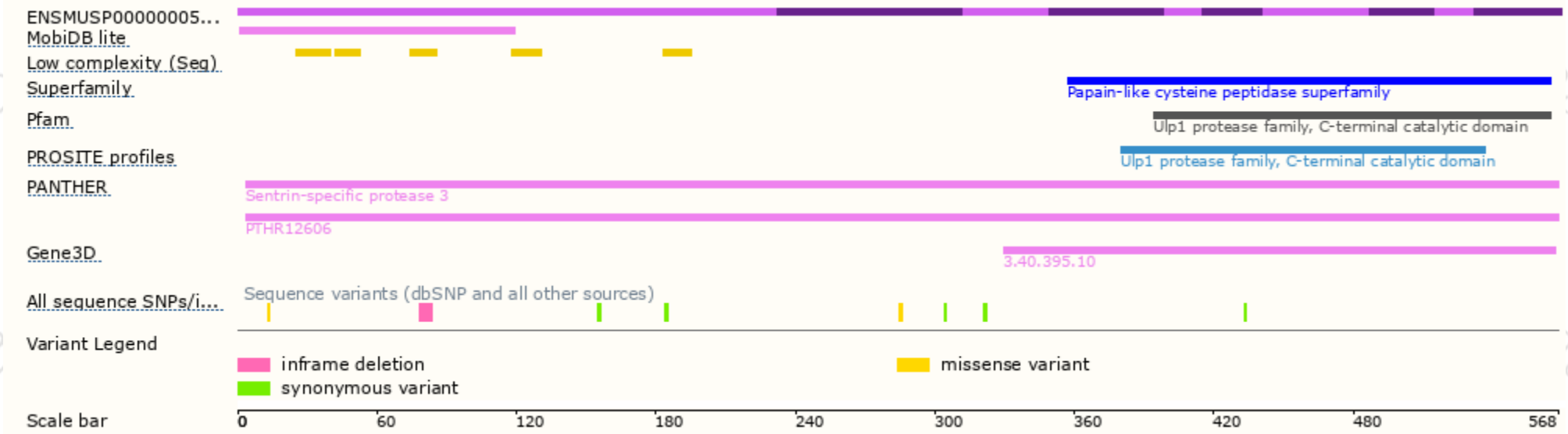
The strategy is based on the design of *Senp3-201* transcript,The transcription is shown below



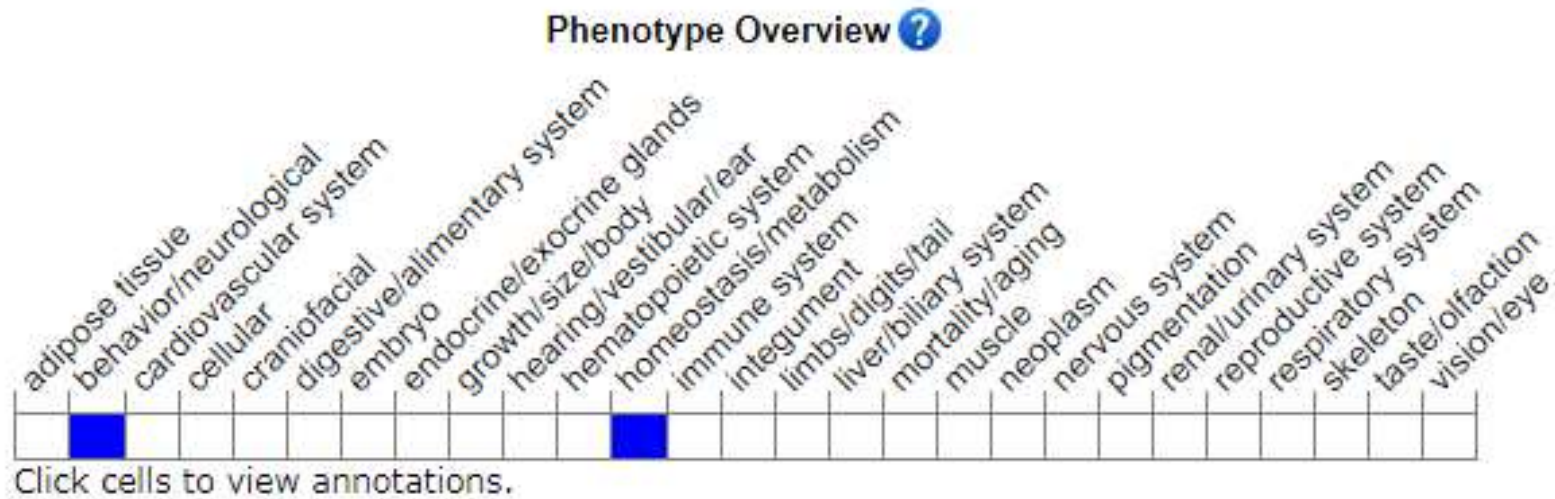
集萃药康
GemPharmatech



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/>).

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

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