

# ***Sp100* Cas9-KO Strategy**

**Designer: Ruirui Zhang**

**Reviewer: Daohua Xu**

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# Project Overview

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**Project Name**

*Sp100*

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**Project type**

**Cas9-KO**

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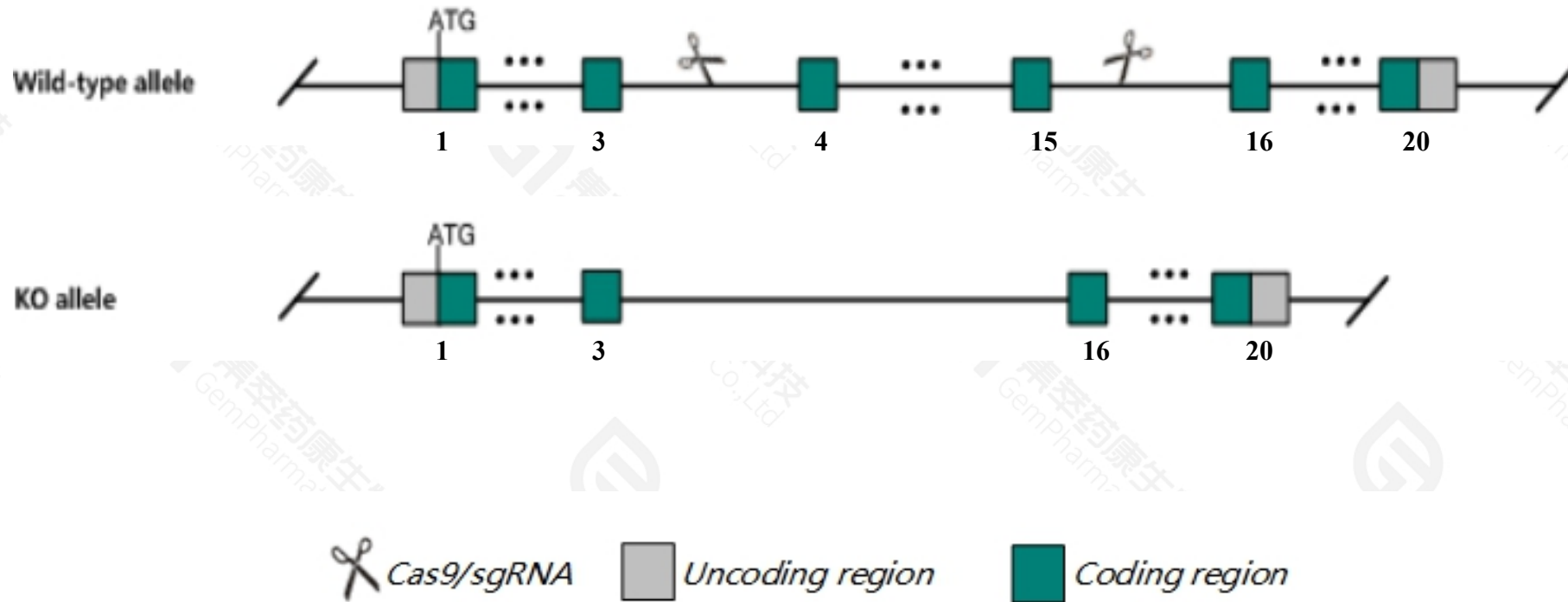
**Strain background**

**C57BL/6JGpt**

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# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Sp100* gene. The schematic diagram is as follows:



- The *Sp100* gene has 13 transcripts. According to the structure of *Sp100* gene, exon4-exon15 of *Sp100*-202(ENSMUST00000066427.11) transcript is recommended as the knockout region. The region contains 1007bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Sp100* 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.



- Transcript *Sp100-207* may not be affected.
- The *Sp100* gene is located on the Chr1. 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)

## Sp100 nuclear antigen Sp100 [ *Mus musculus* (house mouse) ]

Gene ID: 20684, updated on 17-Dec-2020

[Download Datasets](#)

### Summary

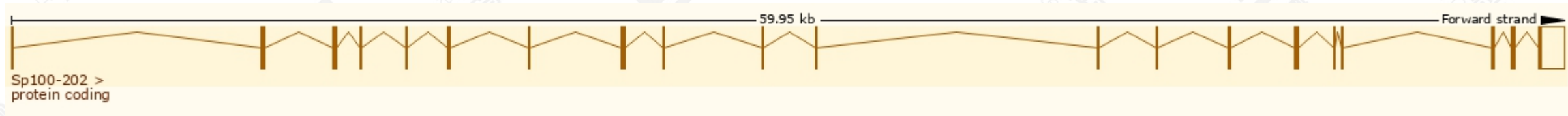
Official Symbol	Sp100 provided by <a href="#">MGI</a>
Official Full Name	nuclear antigen Sp100 provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:109561</a>
See related	<a href="#">Ensembl:ENSMUSG00000026222</a>
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	A430075G10Rik
Expression	Broad expression in thymus adult (RPKM 9.0), spleen adult (RPKM 7.8) and 20 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

The gene has 13 transcripts,all transcripts are shown below:

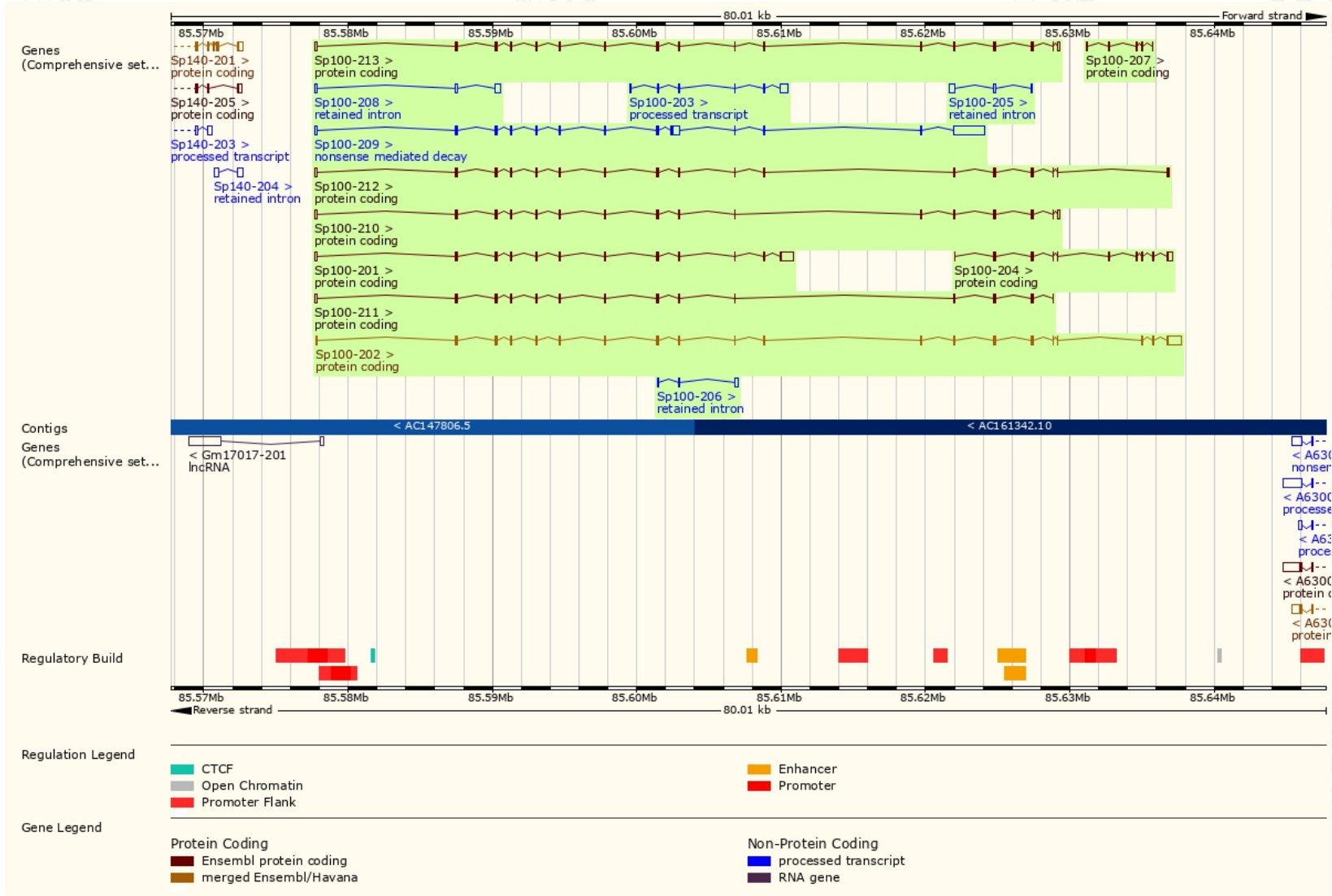
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt Match	Flags
Sp100-202	<a href="#">ENSMUST00000066427.11</a>	2708	<a href="#">591aa</a>	Protein coding	<a href="#">CCDS35639</a>	<a href="#">Q8C405</a>	TSL:1 GENCODE basic APPRIS P1
Sp100-201	<a href="#">ENSMUST00000054279.15</a>	1978	<a href="#">348aa</a>	Protein coding	<a href="#">CCDS83567</a>	<a href="#">E9Q4Y0</a>	TSL:1 GENCODE basic
Sp100-213	<a href="#">ENSMUST00000155094.8</a>	1666	<a href="#">482aa</a>	Protein coding	<a href="#">CCDS83568</a>	<a href="#">O35892-1</a>	TSL:1 GENCODE basic
Sp100-210	<a href="#">ENSMUST00000147552.8</a>	1597	<a href="#">464aa</a>	Protein coding	<a href="#">CCDS83569</a>	<a href="#">O35892-2</a>	TSL:1 GENCODE basic
Sp100-212	<a href="#">ENSMUST00000153574.8</a>	1653	<a href="#">494aa</a>	Protein coding	-	<a href="#">E9QA05</a>	TSL:5 GENCODE basic
Sp100-211	<a href="#">ENSMUST00000150967.8</a>	1343	<a href="#">418aa</a>	Protein coding	-	<a href="#">A0A1B0GX24</a>	CDS 3' incomplete TSL:1
Sp100-204	<a href="#">ENSMUST00000132641.8</a>	1197	<a href="#">302aa</a>	Protein coding	-	<a href="#">F6WL90</a>	CDS 5' incomplete TSL:5
Sp100-207	<a href="#">ENSMUST00000141709.2</a>	409	<a href="#">136aa</a>	Protein coding	-	<a href="#">F6Q968</a>	CDS 5' and 3' incomplete TSL:5
Sp100-209	<a href="#">ENSMUST00000145440.8</a>	3807	<a href="#">304aa</a>	Nonsense mediated decay	-	<a href="#">D6RIJ4</a>	TSL:2
Sp100-203	<a href="#">ENSMUST00000129951.8</a>	833	No protein	Processed transcript	-	-	TSL:3
Sp100-208	<a href="#">ENSMUST00000141998.2</a>	699	No protein	Retained intron	-	-	TSL:2
Sp100-205	<a href="#">ENSMUST00000134283.2</a>	541	No protein	Retained intron	-	-	TSL:3
Sp100-206	<a href="#">ENSMUST00000140758.2</a>	395	No protein	Retained intron	-	-	TSL:3

The strategy is based on the design of *Sp100-202* transcript,the transcription is shown below:





# Genomic location distribution





# Protein domain



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

Tel: 025-5864 1534

