

# *Skp1a* Cas9-KO Strategy

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**Reviewer:**

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**Design Date:**

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# Project Overview

**Project Name**

*Skp1a*

**Project type**

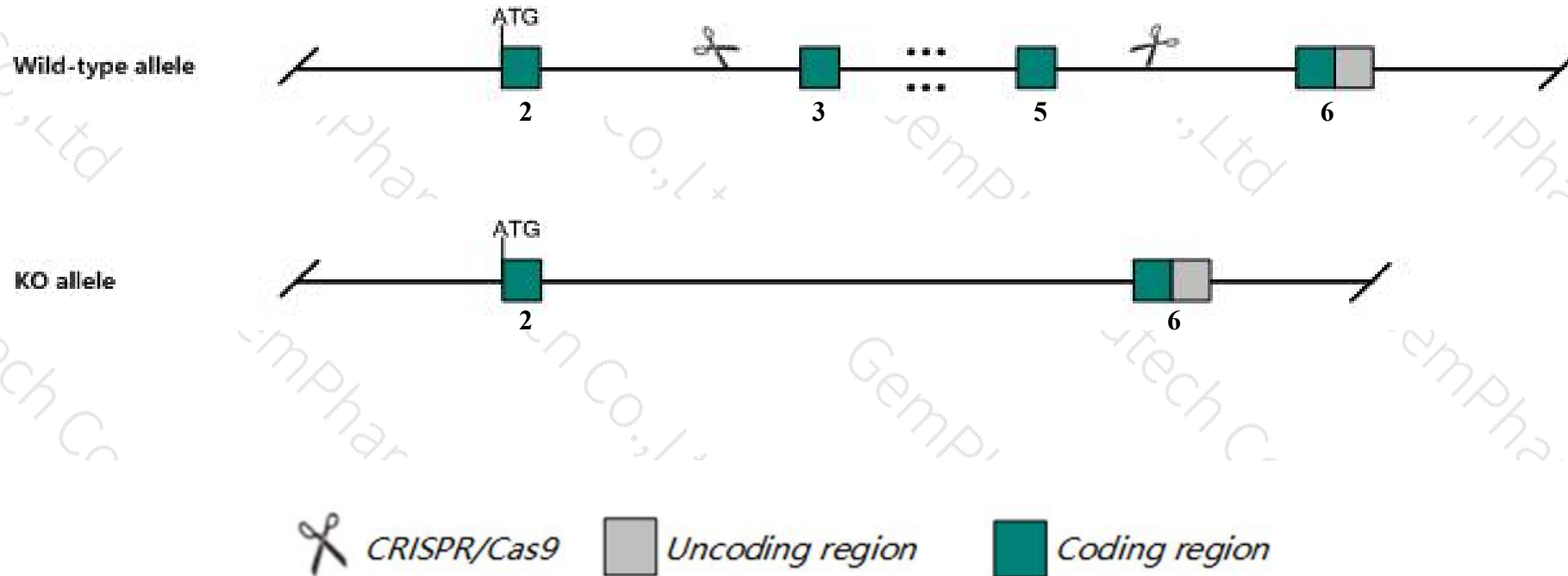
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Skp1a* gene. The schematic diagram is as follows:



- The *Skp1a* gene has 6 transcripts. According to the structure of *Skp1a* gene, exon3-exon5 of *Skp1a*-203 (ENSMUST00000109072.1) transcript is recommended as the knockout region. The region contains 359bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Skp1a* gene. The brief process is as follows: CRISPR/Cas9 system

- The *Skp1a* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.



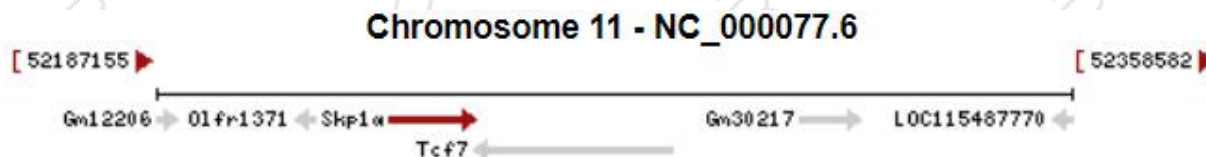
# Gene information (NCBI)

## Skp1a S-phase kinase-associated protein 1A [ *Mus musculus* (house mouse) ]

Gene ID: 21402, updated on 11-Sep-2019

### Summary

|                           |   |
|---------------------------|---|
| <b>Official Symbol</b>    | Skp1a provided by <a href="#">MGI</a>   |
| <b>Official Full Name</b> | S-phase kinase-associated protein 1A provided by <a href="#">MGI</a>  |
| <b>Primary source</b>     | <a href="#">MGI:MGI:103575</a>  |
| <b>See related</b>        | <a href="#">Ensembl:ENSMUSG000000036309</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>      | OCP2; SKP1; p19A; 15kDa; EMC19; OCP-II; Tceb1l; p19Skp1; 2610043E24Rik; 2610206H23Rik   |
| <b>Expression</b>         | Broad expression in CNS E18 (RPKM 68.9), CNS E11.5 (RPKM 64.4) and 22 other tissues <a href="#">See more</a>  |
| <b>Orthologs</b>          | <a href="#">human</a> <a href="#">all</a>   |



# Transcript information (Ensembl)

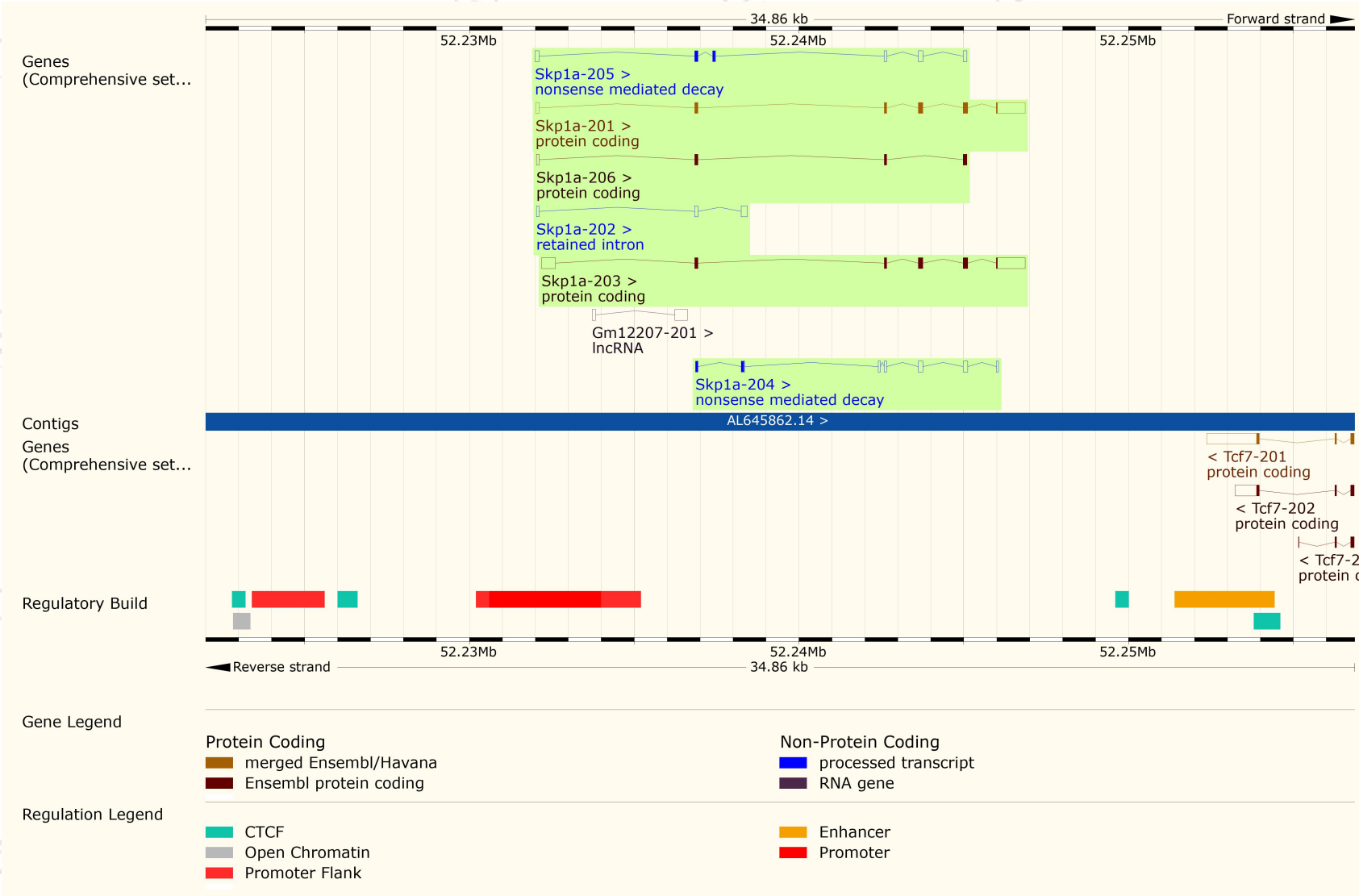
The gene has 6 transcripts,all transcripts are shown below:

| Name      | Transcript ID                         | bp   | Protein               | Translation ID                       | Biotype                 | CCDS                      | UniProt                                       | Flags                         |
|-----------|---------------------------------------|------|-----------------------|--------------------------------------|-------------------------|---------------------------|---|-------------------------------|
| Skp1a-203 | <a href="#">ENSMUST00000109072.1</a>  | 1754 | <a href="#">163aa</a> | <a href="#">ENSMUSP00000104700.1</a> | Protein coding          | <a href="#">CCDS24669</a> | <a href="#">Q5SUR3</a> <a href="#">Q9WTX5</a> | TSL:5 GENCODE basic APPRIS P1 |
| Skp1a-201 | <a href="#">ENSMUST00000037324.11</a> | 1440 | <a href="#">163aa</a> | <a href="#">ENSMUSP00000038744.5</a> | Protein coding          | <a href="#">CCDS24669</a> | <a href="#">Q5SUR3</a> <a href="#">Q9WTX5</a> | TSL:1 GENCODE basic APPRIS P1 |
| Skp1a-206 | <a href="#">ENSMUST00000166537.7</a>  | 370  | <a href="#">96aa</a>  | <a href="#">ENSMUSP00000131833.1</a> | Protein coding          | -                         | <a href="#">E9PUV4</a>                        | CDS 3' incomplete TSL:3       |
| Skp1a-204 | <a href="#">ENSMUST00000116595.2</a>  | 667  | <a href="#">50aa</a>  | <a href="#">ENSMUSP00000112294.2</a> | Nonsense mediated decay | -                         | <a href="#">F6TGP8</a>                        | CDS 5' incomplete TSL:3       |
| Skp1a-205 | <a href="#">ENSMUST00000147684.7</a>  | 642  | <a href="#">56aa</a>  | <a href="#">ENSMUSP00000129711.1</a> | Nonsense mediated decay | -                         | <a href="#">E9Q3Q7</a>                        | TSL:3                         |
| Skp1a-202 | <a href="#">ENSMUST00000093121.12</a> | 353  | No protein            | -                                    | Retained intron         | -                         | -   | TSL:3                         |

The strategy is based on the design of *Skp1a-203* transcript.The transcription is shown below

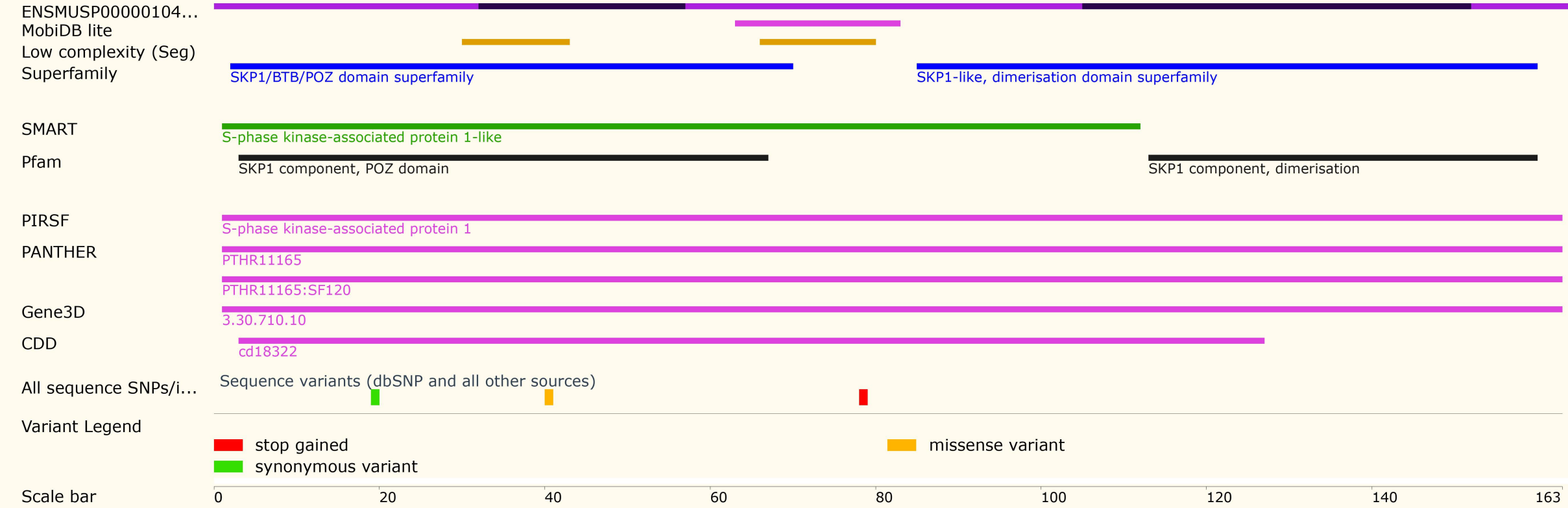


# Genomic location distribution





# Protein domain



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

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