

# ***Rnf121*** Cas9-KO Strategy

Designer: Lingyan Wu

Reviewer: Rui Xiong

Design Date: 2020-5-20

# Project Overview

**Project Name**

***Rnf121***

**Project type**

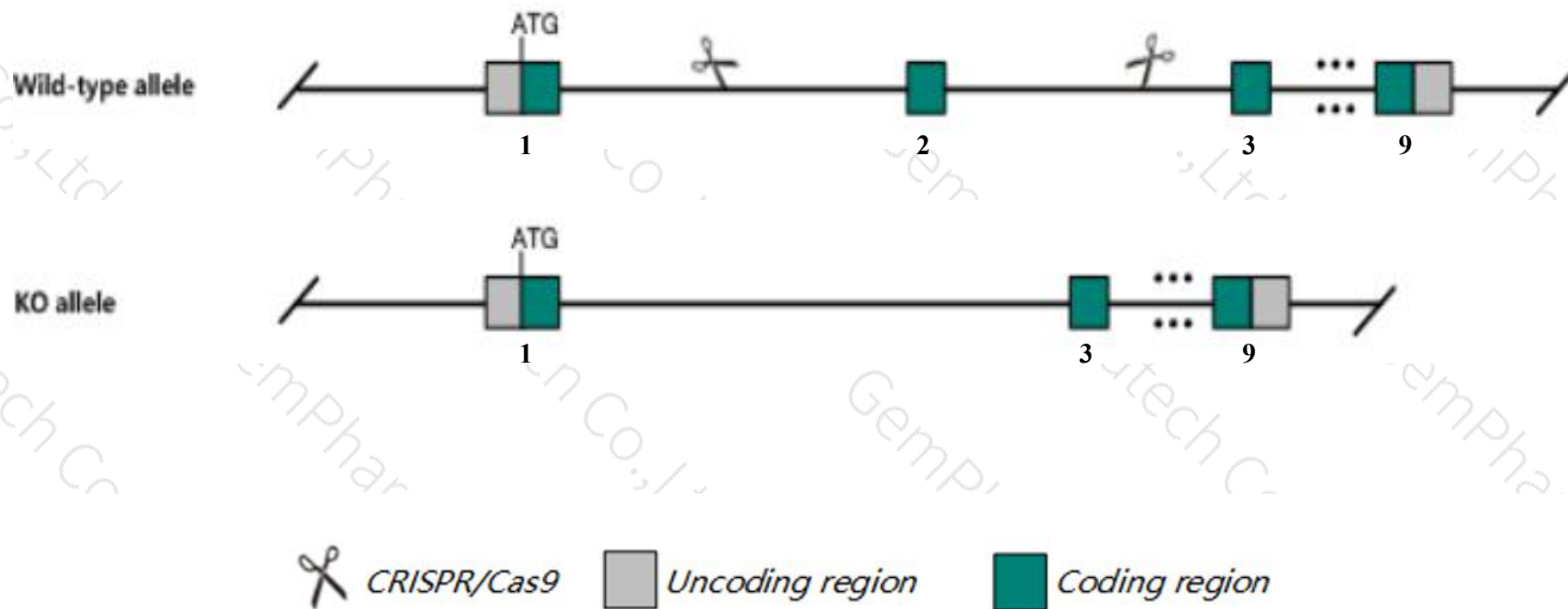
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rnf121* gene. The schematic diagram is as follows:



- The *Rnf121* gene has 7 transcripts. According to the structure of *Rnf121* gene, exon2 of *Rnf121-202* (ENSMUST00000096639.11) transcript is recommended as the knockout region. The region contains 38bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Rnf121* gene. The brief process is as follows: CRISPR/Cas9 system

- Transcript *Rnf121-206* may not be affected.
- The *Rnf121* gene is located on the Chr7. 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)

## Rnf121 ring finger protein 121 [Mus musculus (house mouse)]

Gene ID: 75212, updated on 13-Mar-2020

### Summary



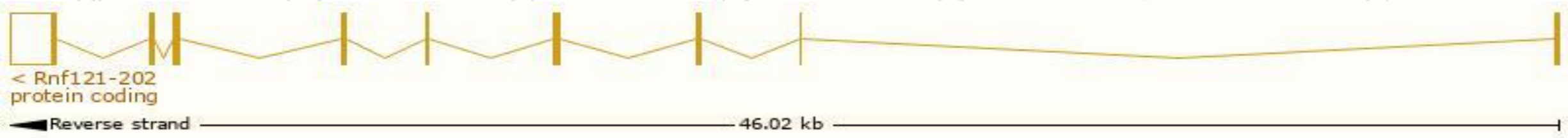
|                           |                                                                                                                                                                           |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Official Symbol</b>    | Rnf121 provided by <a href="#">MGI</a>                                                                                                                                    |
| <b>Official Full Name</b> | ring finger protein 121 provided by <a href="#">MGI</a>                                                                                                                   |
| <b>Primary source</b>     | <a href="#">MGI:MGI:1922462</a>                                                                                                                                           |
| <b>See related</b>        | <a href="#">Ensembl:ENSMUSG00000070426</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>      | 4930544L10Rik                                                                                                                                                             |
| <b>Expression</b>         | Ubiquitous expression in placenta adult (RPKM 13.4), large intestine adult (RPKM 13.2) and 28 other tissues <a href="#">See more</a>                                      |
| <b>Orthologs</b>          | <a href="#">human</a> <a href="#">all</a>                                                                                                                                 |

# Transcript information（Ensembl）

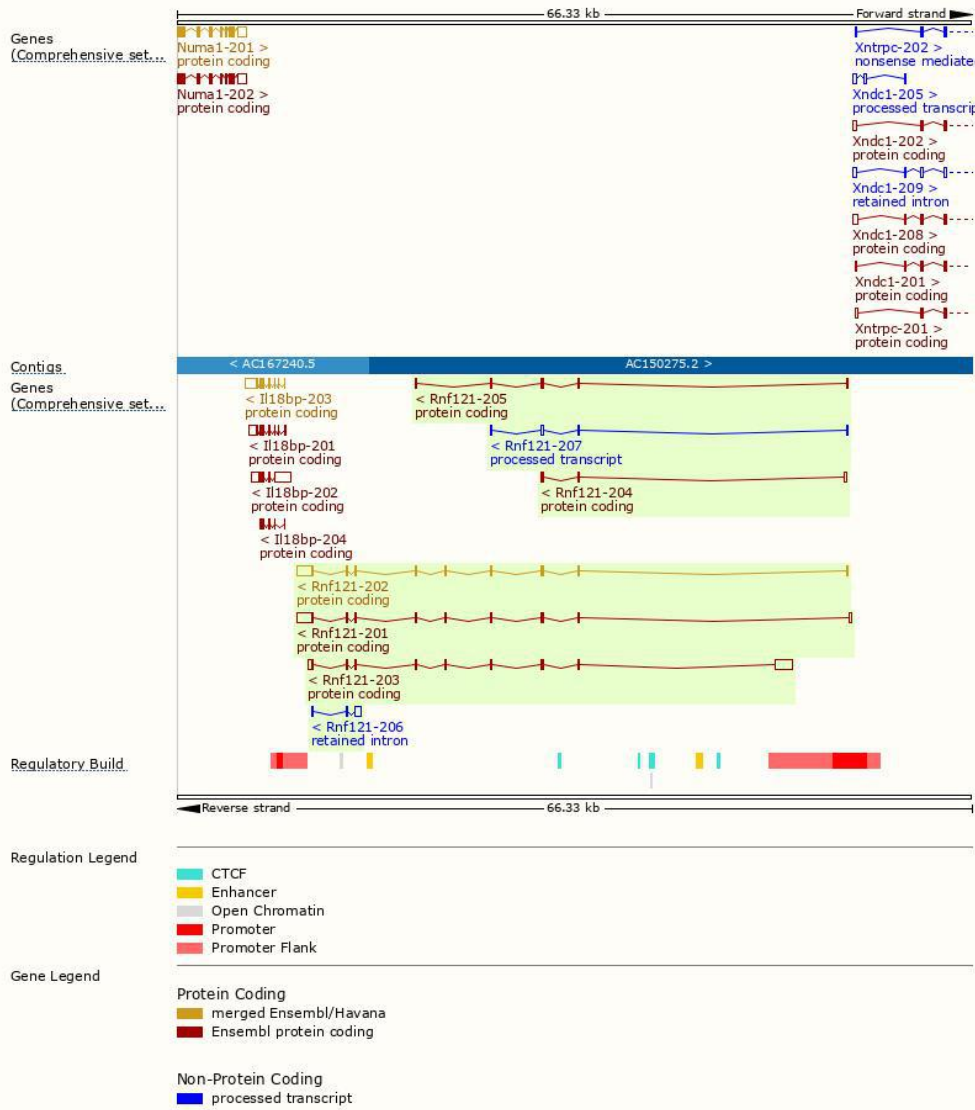
The gene has 7 transcripts,all transcripts are shown below:

| Name       | Transcript ID                         | bp   | Protein               | Biotype              | CCDS                      | UniProt                | Flags                                                                                                                                                                                                         |
|------------|---------------------------------------|------|-----------------------|----------------------|---------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rnf121-202 | <a href="#">ENSMUST00000096639.11</a> | 2249 | <a href="#">327aa</a> | Protein coding       | <a href="#">CCDS21523</a> | <a href="#">Q8R1Z9</a> | TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P1 |
| Rnf121-203 | <a href="#">ENSMUST00000106953.7</a>  | 2545 | <a href="#">310aa</a> | Protein coding       | -                         | <a href="#">Q8R1Z9</a> | TSL:1 GENCODE basic                                                                                                                                                                                           |
| Rnf121-201 | <a href="#">ENSMUST00000089052.10</a> | 2344 | <a href="#">304aa</a> | Protein coding       | -                         | <a href="#">K4DI70</a> | TSL:1 GENCODE basic                                                                                                                                                                                           |
| Rnf121-205 | <a href="#">ENSMUST00000131104.2</a>  | 508  | <a href="#">170aa</a> | Protein coding       | -                         | <a href="#">F6XTP0</a> | 5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:5                                                                           |
| Rnf121-204 | <a href="#">ENSMUST00000130074.1</a>  | 446  | <a href="#">57aa</a>  | Protein coding       | -                         | <a href="#">D3YWK0</a> | CDS 3' incomplete TSL:3                                                                                                                                                                                       |
| Rnf121-207 | <a href="#">ENSMUST00000156119.1</a>  | 364  | No protein            | Processed transcript | -                         | -                      | TSL:2                                                                                                                                                                                                         |
| Rnf121-206 | <a href="#">ENSMUST00000149976.1</a>  | 619  | No protein            | Retained intron      | -                         | -                      | TSL:2                                                                                                                                                                                                         |

The strategy is based on the design of *Rnf121-202* transcript,the transcription is shown below:



# Genomic location distribution





# Protein domain



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

Tel: 400-9660890

