

# *Ap2a2* Cas9-KO Strategy

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# Project Overview

**Project Name**

*Ap2a2*

**Project type**

**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ap2a2* gene. The schematic diagram is as follows:



- The *Ap2a2* gene has 3 transcripts. According to the structure of *Ap2a2* gene, exon2-exon6 of *Ap2a2-201* (ENSMUST00000003038.11) transcript is recommended as the knockout region. The region contains 638bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ap2a2* gene. The brief process is as follows: CRISPR/Cas9 system

- The *Ap2a2* 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)

## Ap2a2 adaptor-related protein complex 2, alpha 2 subunit [ *Mus musculus* (house mouse) ]

Gene ID: 11772, updated on 5-Jan-2020

### Summary

|                           |                                                                                                                                                                           |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Official Symbol</b>    | Ap2a2 provided by <a href="#">MGI</a>                                                                                                                                     |
| <b>Official Full Name</b> | adaptor-related protein complex 2, alpha 2 subunit provided by <a href="#">MGI</a>                                                                                        |
| <b>Primary source</b>     | <a href="#">MGI:MGI:101920</a>                                                                                                                                            |
| <b>See related</b>        | <a href="#">Ensembl:ENSMUSG00000002957</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>      | L25; Adtab; C78001; AF006990; AW146353; 2410074K14Rik                                                                                                                     |
| <b>Expression</b>         | Ubiquitous expression in kidney adult (RPKM 33.9), duodenum adult (RPKM 33.3) and 28 other tissues <a href="#">See more</a>                                               |
| <b>Orthologs</b>          | <a href="#">human</a> <a href="#">all</a>                                                                                                                                 |

### Genomic context

**Location:** 7; 7 F5

See Ap2a2 in [Genome Data Viewer](#)

**Exon count:** 23

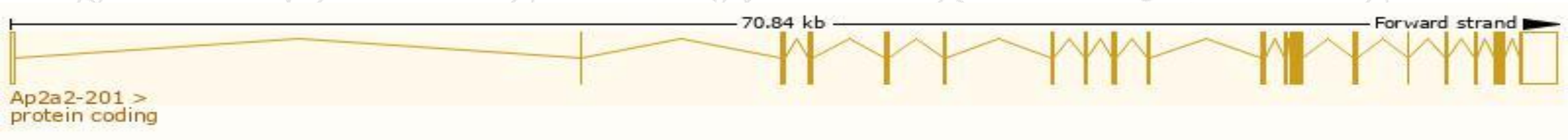
| Annotation release  | Status            | Assembly                                       | Chr | Location                           |
|---------------------|-------------------|------------------------------------------------|-----|------------------------------------|
| <a href="#">108</a> | current           | GRCm38.p6 ( <a href="#">GCF_000001635.26</a> ) | 7   | NC_000073.6 (141562180..141633011) |
| Build 37.2          | previous assembly | MGSCv37 ( <a href="#">GCF_000001635.18</a> )   | 7   | NC_000073.5 (148748079..148818910) |

# Transcript information (Ensembl)

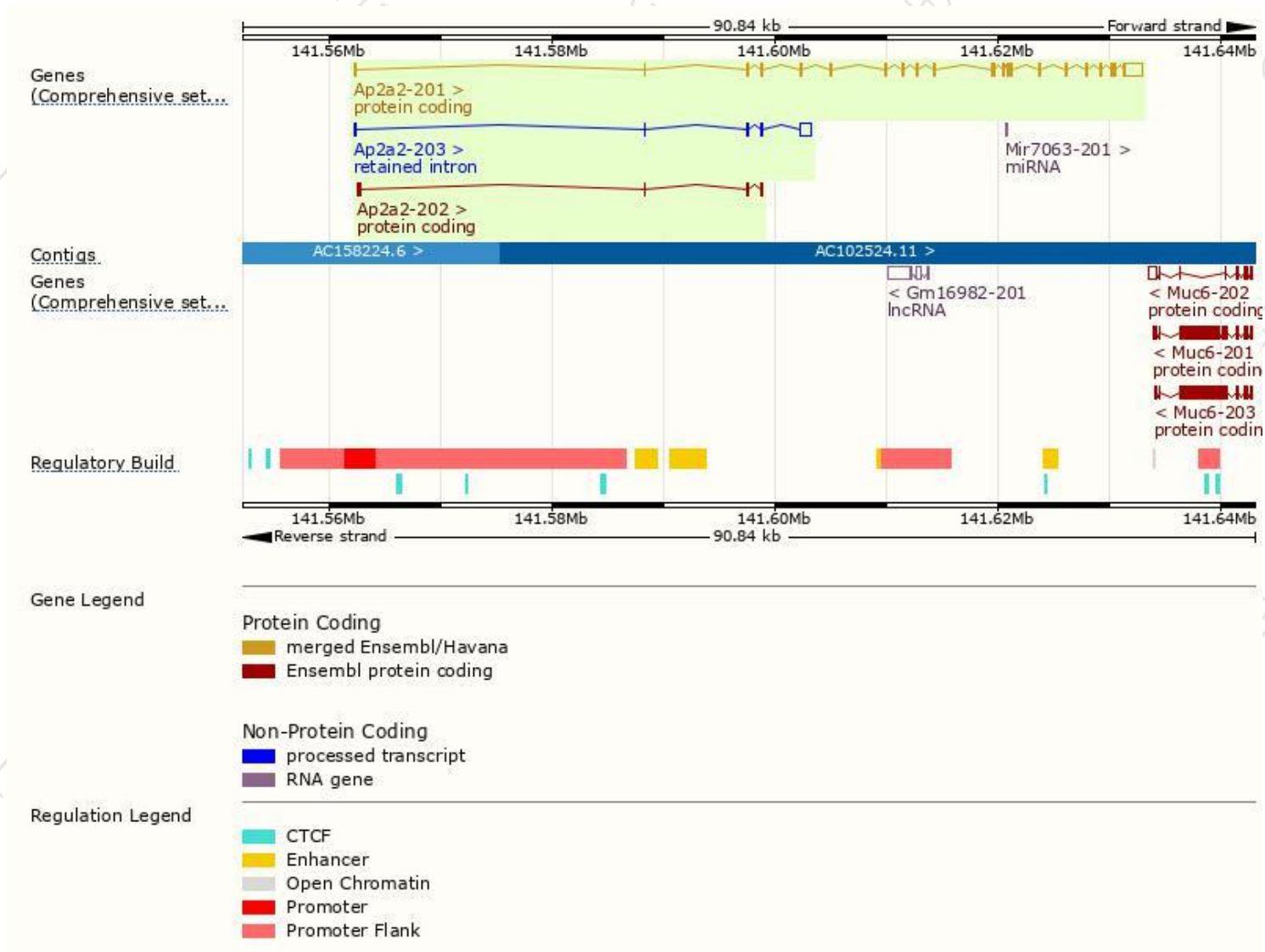
The gene has 3 transcripts,all transcripts are shown below:

| Name      | Transcript ID                         | bp   | Protein               | Biotype         | CCDS                      | UniProt                    | Flags                         |
|-----------|---------------------------------------|------|-----------------------|-----------------|---------------------------|----------------------------|-------------------------------|
| Ap2a2-201 | <a href="#">ENSMUST00000003038.11</a> | 4646 | <a href="#">938aa</a> | Protein coding  | <a href="#">CCDS40188</a> | <a href="#">P17427</a>     | TSL:1 GENCODE basic APPRIS P1 |
| Ap2a2-202 | <a href="#">ENSMUST00000201261.1</a>  | 590  | <a href="#">131aa</a> | Protein coding  | -                         | <a href="#">A0A0J9YUA7</a> | CDS 3' incomplete TSL:3       |
| Ap2a2-203 | <a href="#">ENSMUST00000201320.1</a>  | 1549 | No protein            | Retained intron | -                         | -                          | TSL:1                         |

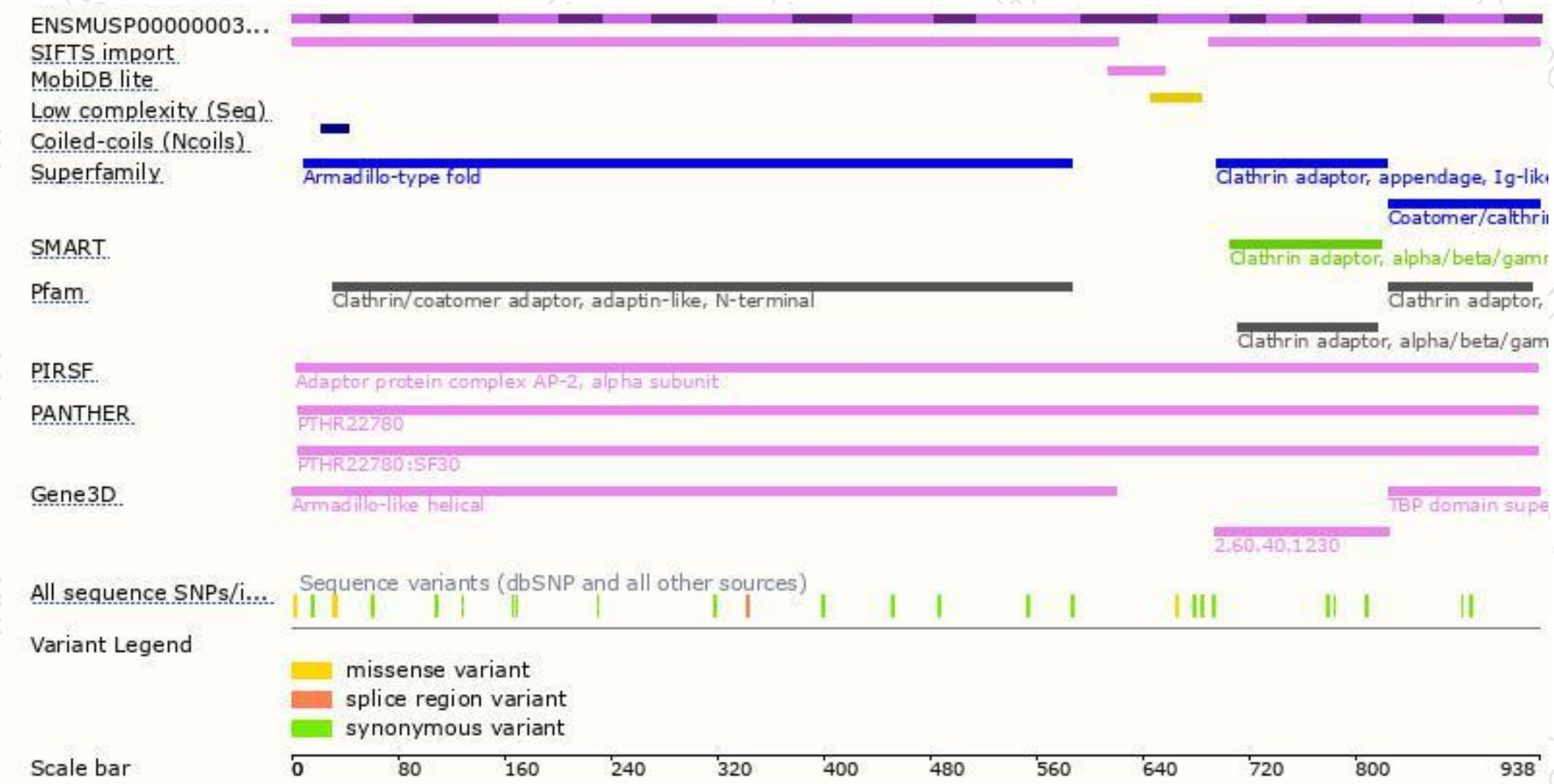
The strategy is based on the design of *Ap2a2-201* transcript,The transcription is shown below



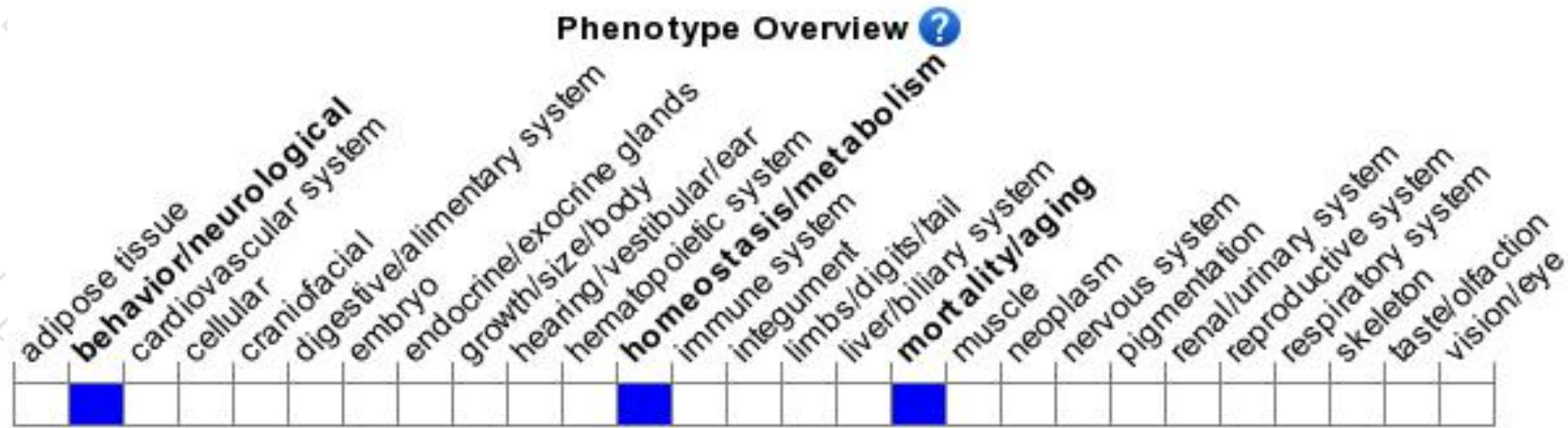
# Genomic location distribution



# 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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