

# *Slc30a3* Cas9-KO Strategy

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# Project Overview

**Project Name**

***Slc30a3***

**Project type**

**Cas9-KO**

**Strain background**

**C57BL/6J**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc30a3* gene. The schematic diagram is as follows:



- The *Slc30a3* gene has 6 transcripts. According to the structure of *Slc30a3* gene, exon2-exon7 of *Slc30a3-201* (ENSMUST00000031037.13) transcript is recommended as the knockout region. The region contains 923bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Slc30a3* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

- According to the existing MGI data, While zinc is absent from synaptic vesicles in homozygous null mice, inactivation of this locus does not affect brain morphology.
- The *Slc30a3* gene is located on the Chr5. 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)

## Slc30a3 solute carrier family 30 (zinc transporter), member 3 [Mus musculus (house mouse)]

Gene ID: 22784, updated on 5-Mar-2019

### Summary



|                           |                                                                                                                                                                           |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Official Symbol</b>    | Slc30a3 provided by <a href="#">MGI</a>                                                                                                                                   |
| <b>Official Full Name</b> | solute carrier family 30 (zinc transporter), member 3 provided by <a href="#">MGI</a>                                                                                     |
| <b>Primary source</b>     | <a href="#">MGI:MGI:1345280</a>                                                                                                                                           |
| <b>See related</b>        | <a href="#">Ensembl:ENSMUSG00000029151</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>      | Znt3                                                                                                                                                                      |
| <b>Expression</b>         | Biased expression in testis adult (RPKM 97.3), cortex adult (RPKM 39.8) and 5 other tissues <a href="#">See more</a>                                                      |
| <b>Orthologs</b>          | <a href="#">human</a> <a href="#">all</a>                                                                                                                                 |

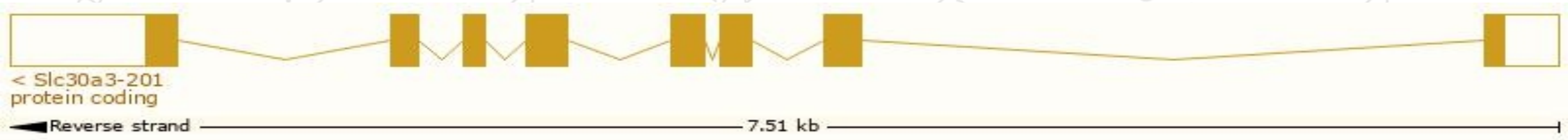


# Transcript information (Ensembl)

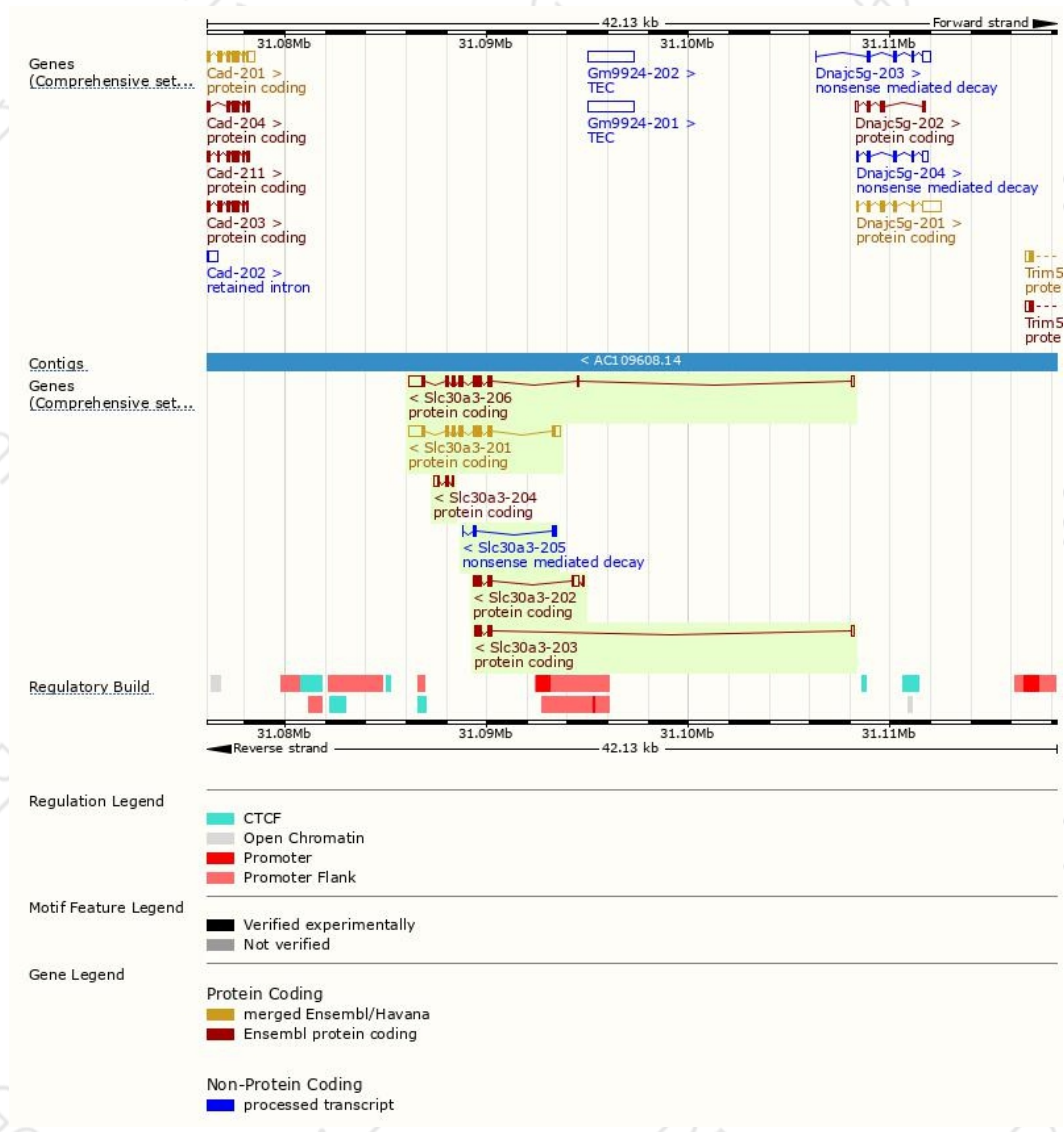
The gene has 6 transcripts,all transcripts are shown below:

| Name        | Transcript ID                         | bp   | Protein               | Biotype                 | CCDS                      | UniProt                       | Flags                         |
|-------------|---------------------------------------|------|-----------------------|-------------------------|---------------------------|-------------------------------|-------------------------------|
| Slc30a3-201 | <a href="#">ENSMUST00000031037.13</a> | 2089 | <a href="#">388aa</a> | Protein coding          | <a href="#">CCDS51455</a> | <a href="#">P97441 Q3TMQ7</a> | TSL:1 GENCODE basic APPRIS P1 |
| Slc30a3-206 | <a href="#">ENSMUST00000202740.3</a>  | 1989 | <a href="#">339aa</a> | Protein coding          | <a href="#">CCDS84861</a> | <a href="#">S4R169</a>        | TSL:5 GENCODE basic           |
| Slc30a3-202 | <a href="#">ENSMUST00000200906.3</a>  | 806  | <a href="#">173aa</a> | Protein coding          | -                         | <a href="#">S4R2M0</a>        | CDS 3' incomplete TSL:5       |
| Slc30a3-203 | <a href="#">ENSMUST00000201396.1</a>  | 586  | <a href="#">124aa</a> | Protein coding          | -                         | <a href="#">S4R166</a>        | CDS 3' incomplete TSL:3       |
| Slc30a3-204 | <a href="#">ENSMUST00000201783.1</a>  | 407  | <a href="#">87aa</a>  | Protein coding          | -                         | <a href="#">S4R2S4</a>        | CDS 5' incomplete TSL:2       |
| Slc30a3-205 | <a href="#">ENSMUST00000202731.1</a>  | 386  | <a href="#">60aa</a>  | Nonsense mediated decay | -                         | <a href="#">S4R1P0</a>        | TSL:3                         |

The strategy is based on the design of *Slc30a3-201* transcript,The transcription is shown below

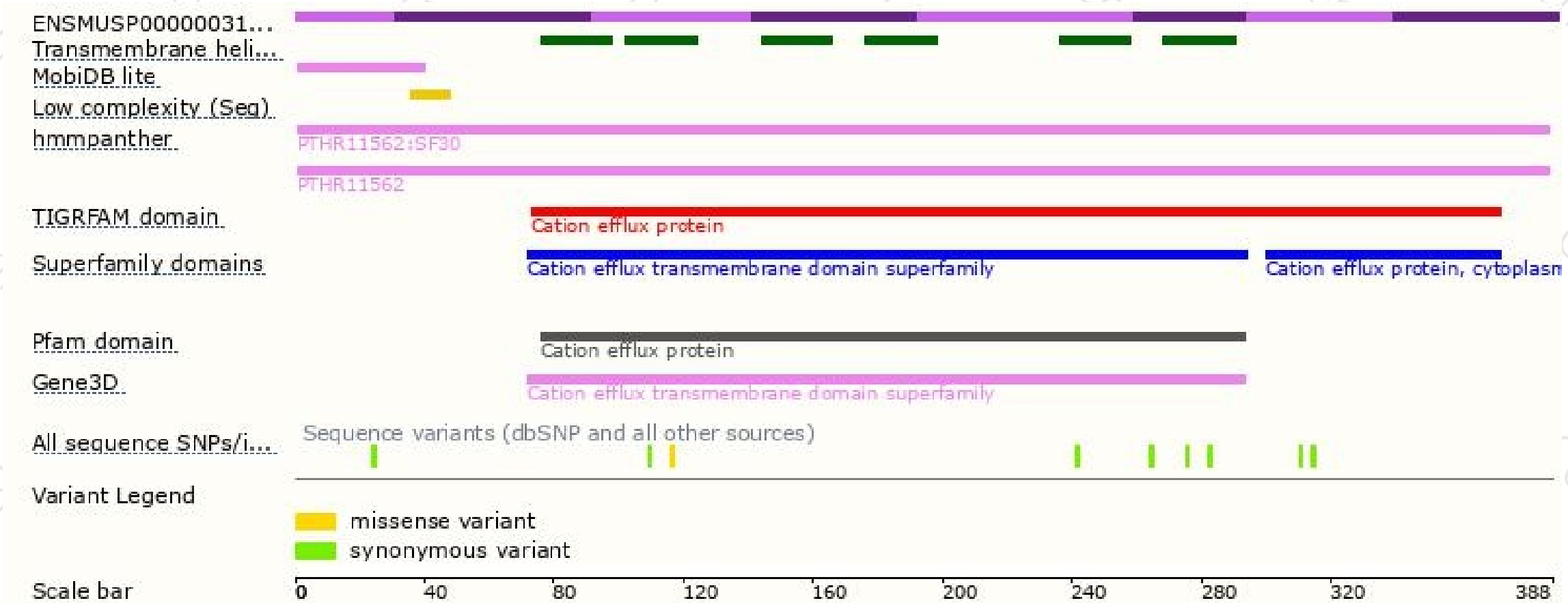


# Genomic location distribution

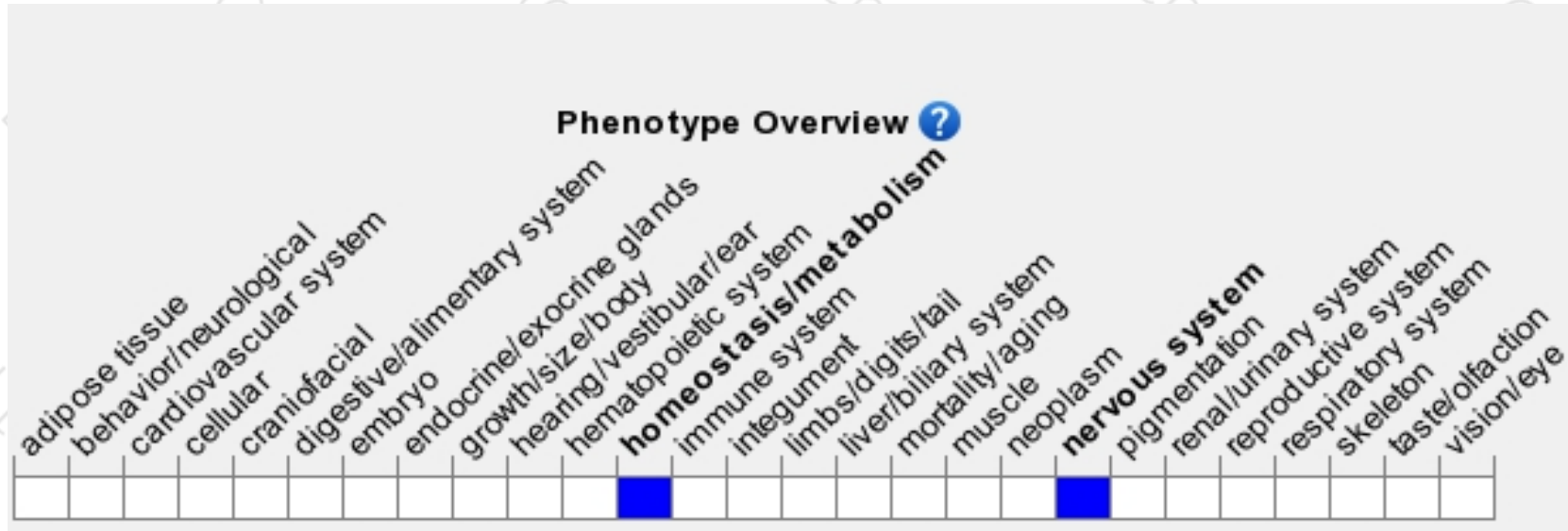




# Protein domain



# Mouse phenotype description(MGI )



*Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).*

According to the existing MGI data, While zinc is absent from synaptic vesicles in homozygous null mice, inactivation of this locus does not affect brain morphology.

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

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