

Glra2 Cas9-KO Strategy

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Project Overview

Project Name

Gla2

Project type

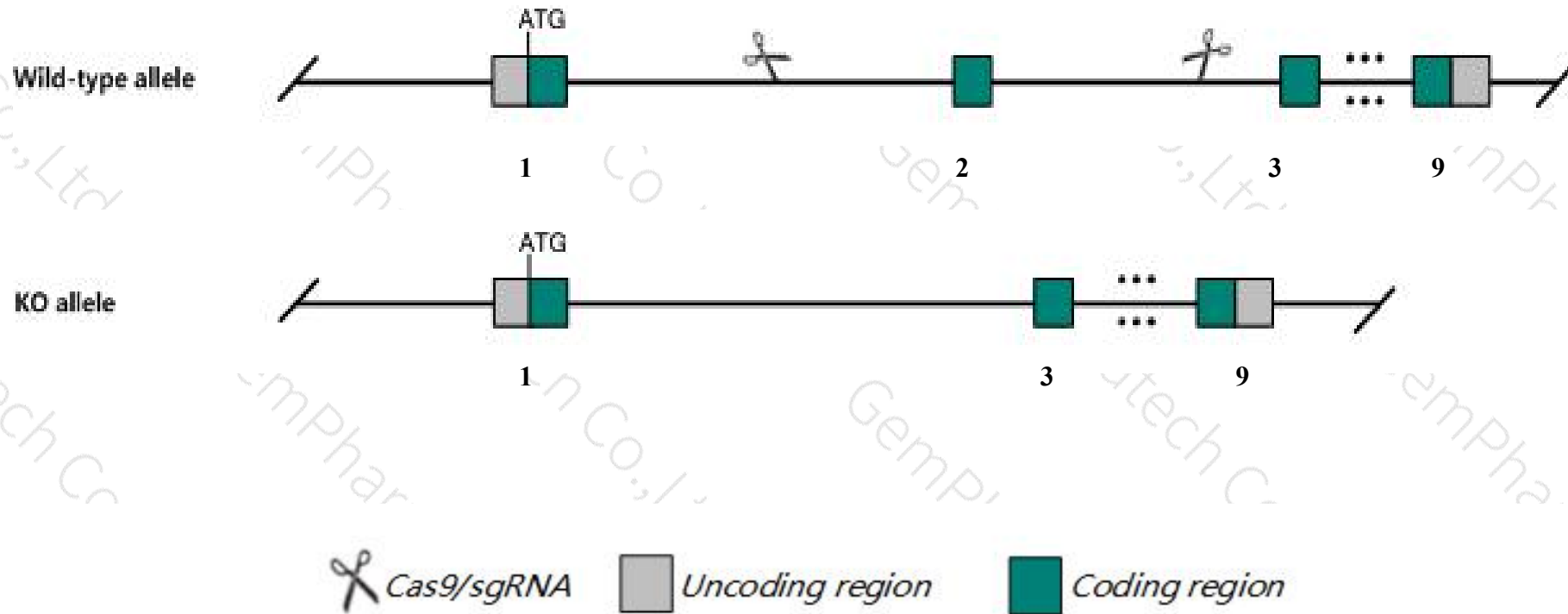
Cas9-KO

Strain background

C57BL/6J

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gfra2* gene. The schematic diagram is as follows:



- The *Gfra2* gene has 1 transcript. According to the structure of *Gfra2* gene, exon2 of *Gfra2-201* (ENSMUST00000058787.8) transcript is recommended as the knockout region. The region contains 134bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Gfra2* 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, Mice homozygous for a null allele lack cortical neuron responses to glycine and taurine but are otherwise normal. Mice homozygous for another targeted allele exhibit impaired interneuron migration into the cortical wall.
- The *Glra2* gene is located on the ChrX. 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 gene transcription and translation processes, all risks cannot be predicted under existing information.

Gene information (NCBI)

Gla2 glycine receptor, alpha 2 subunit [Mus musculus (house mouse)]

Gene ID: 237213, updated on 31-Jan-2019

Summary



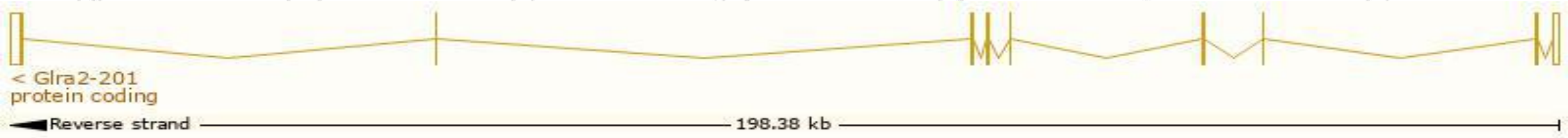
Official Symbol	Gla2 provided by MGI
Official Full Name	glycine receptor, alpha 2 subunit provided by MGI
Primary source	MGI:MGI:95748
See related	Ensembl:ENSMUSG00000018589
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Expression	Biased expression in CNS E18 (RPKM 14.3), whole brain E14.5 (RPKM 8.6) and 4 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

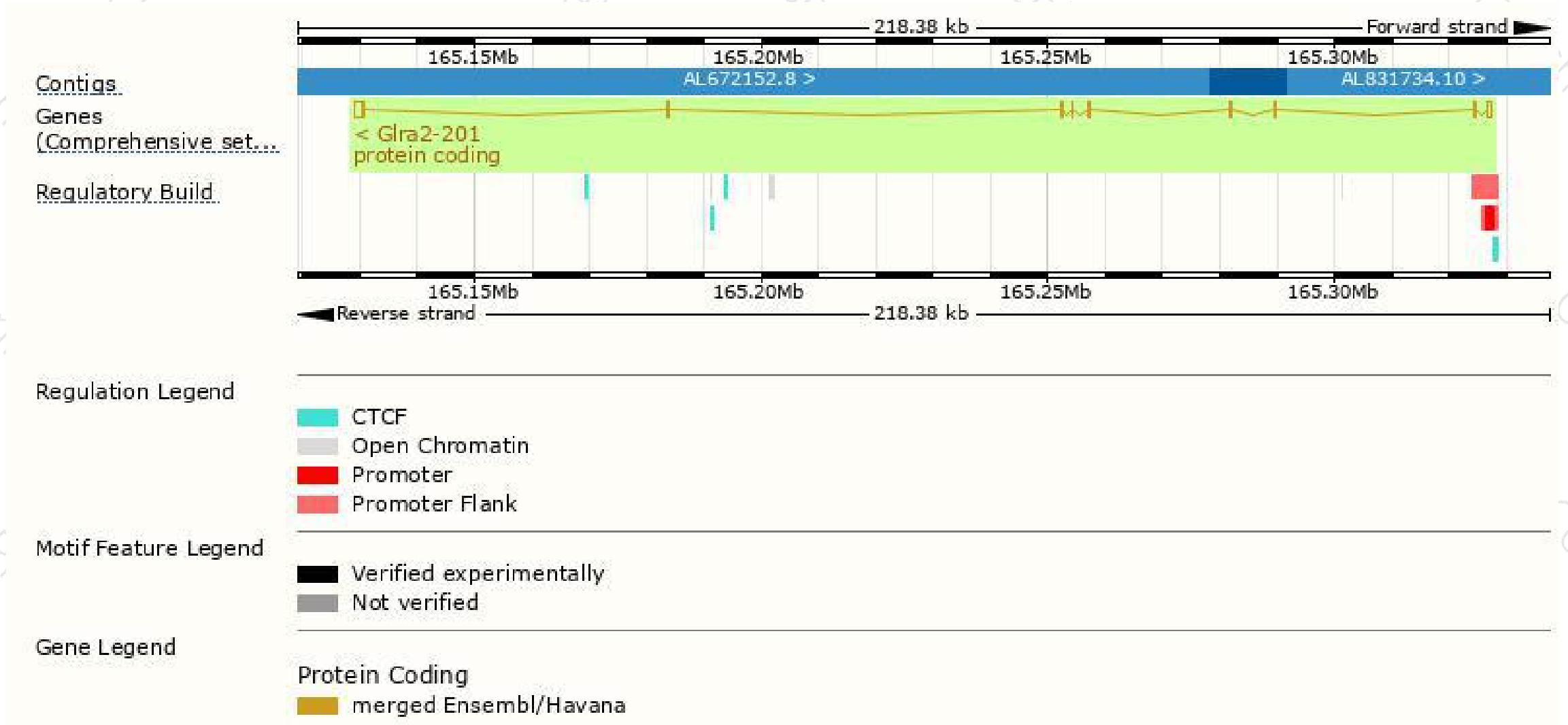
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gira2-201	ENSMUST00000058787.8	3150	452aa	Protein coding	CCDS41206	Q3UTL8 Q7TNC8	TSL:1 GENCODE basic APPRIS P1

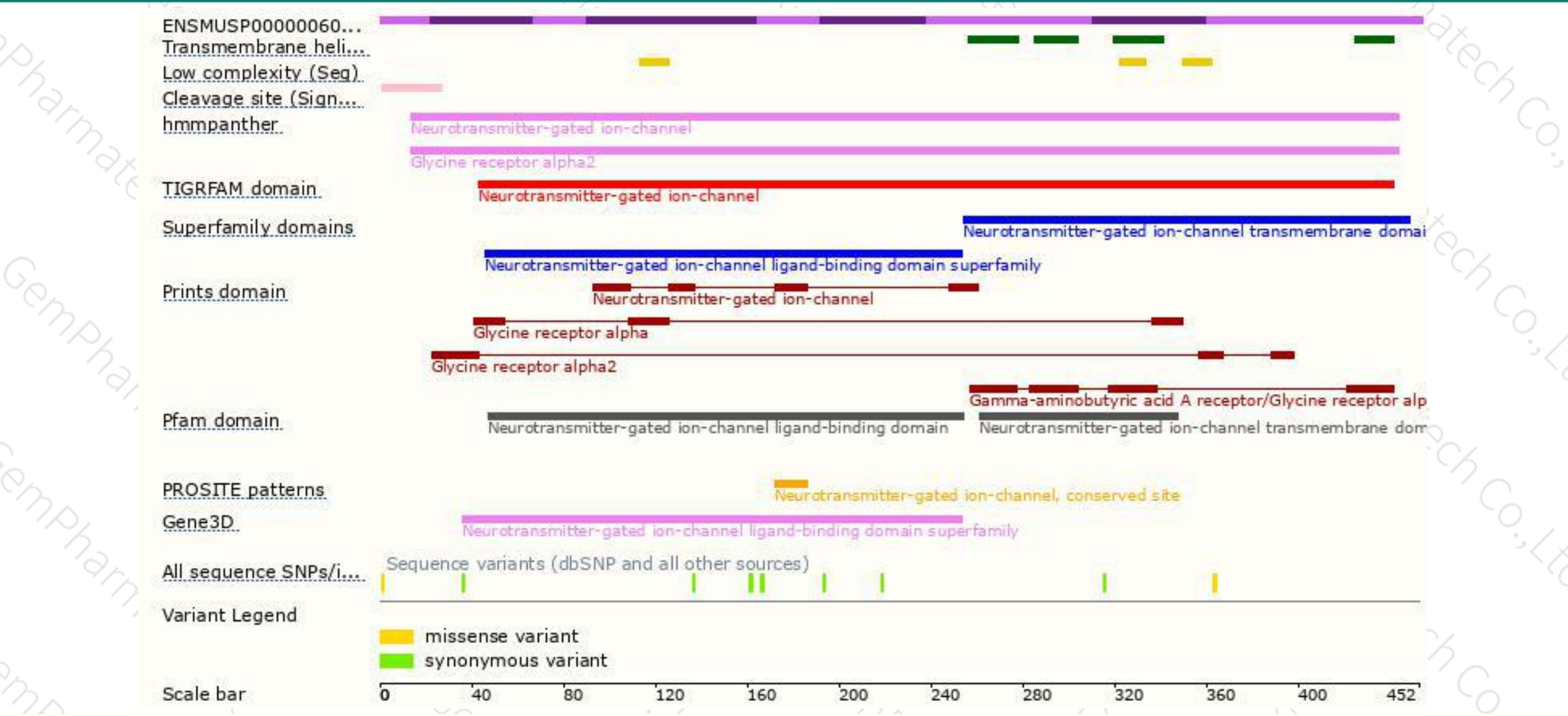
The strategy is based on the design of *Gira2-201* transcript,The transcription is shown below



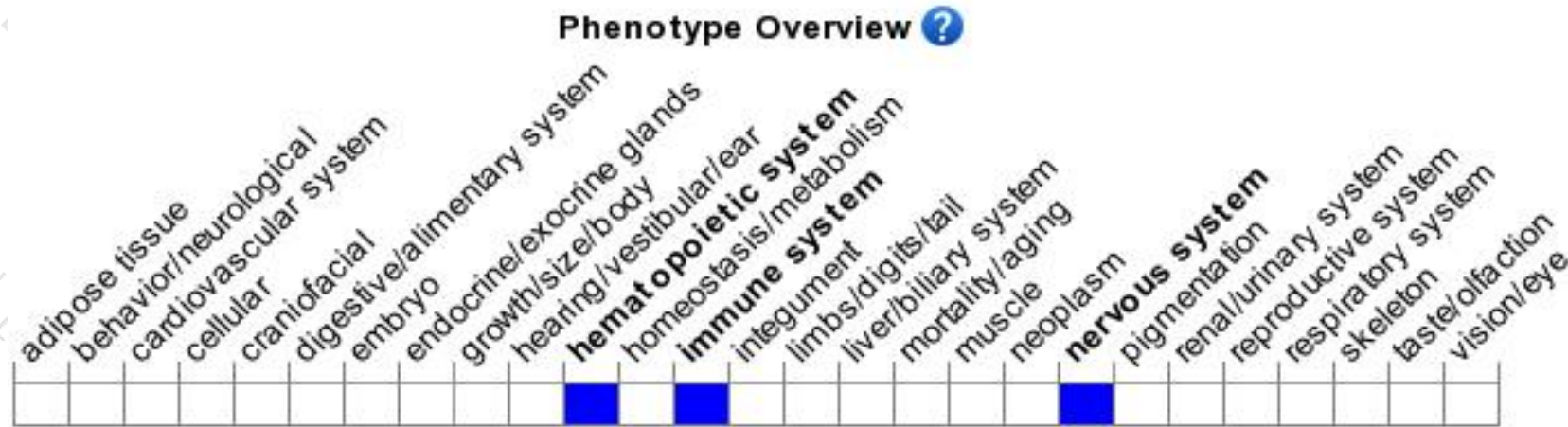
Genomic location distribution



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, Mice homozygous for a null allele lack cortical neuron responses to glycine and taurine but are otherwise normal. Mice homozygous for another targeted allele exhibit impaired interneuron migration into the cortical wall.

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

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