Grin2c Cas9-KO Strategy

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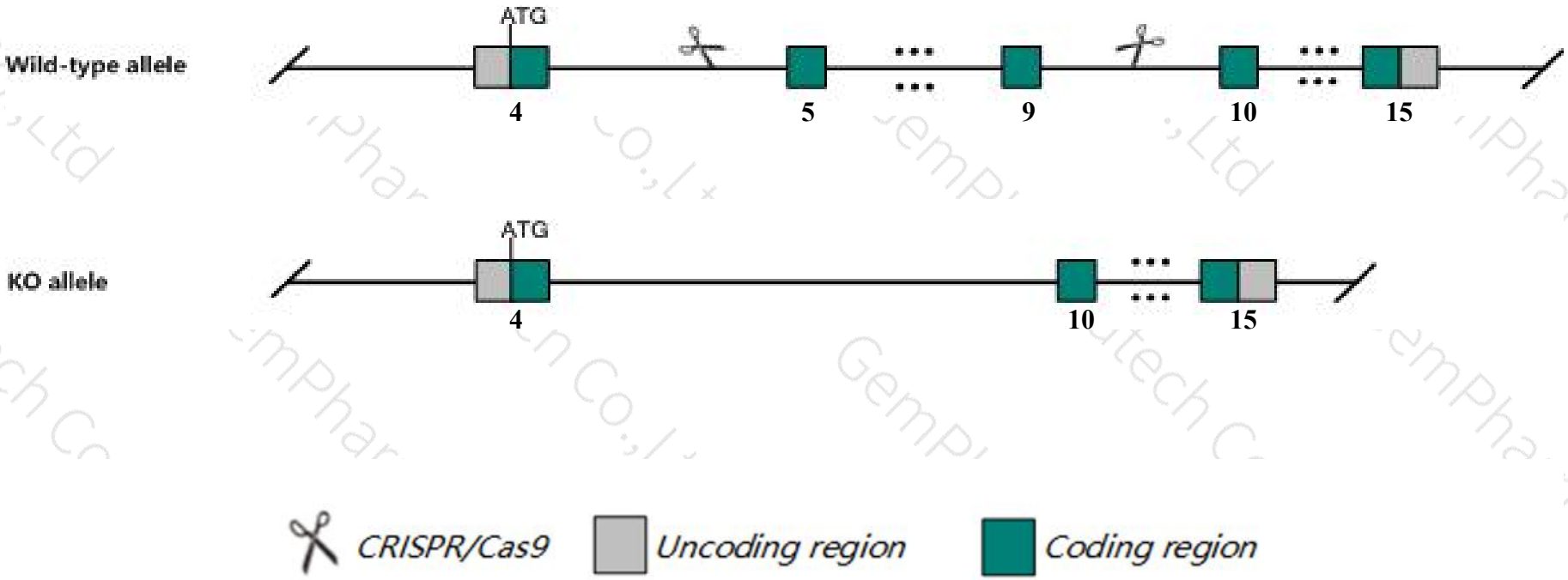
Project Overview

Project Name	***Grin2c***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Grin2c* gene. The schematic diagram is as follows:



Technical routes

➢ The *Grin2c* gene has 2 transcripts. According to the structure of *Grin2c* gene, exon5-exon9 of *Grin2c-202* (ENSMUST00000106554.1) transcript is recommended as the knockout region.The region contains 1246bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Grin2c* gene. The brief process is as follows: CRISPR/Cas9 systen

Notice

- According to the existing MGI data,Homozygotes for targeted null mutations exhibit deficits in motor coordination and reduced granule cell responses to N-methy-D-aspartate in brain slices.

- The *Grin2c* 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）

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Grin2c glutamate receptor, ionotropic, NMDA2C (epsilon 3) [*Mus musculus* (house mouse)]

Gene ID: 14813, updated on 22-Oct-2019

Summary

Official Symbol	Grin2c provided by MGI
Official Full Name	glutamate receptor, ionotropic, NMDA2C (epsilon 3) provided by MGI
Primary source	MGI:MGI:95822
See related	Ensembl:ENSMUSG00000020734
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
Also known as	NR2C; GluN2C; NMDAR2C
Expression	Biased expression in cerebellum adult (RPKM 38.1), frontal lobe adult (RPKM 7.3) and 4 other tissues See more
Orthologs	human all

Genomic context

Location: 11 E2; 11 80.8 cM

See Grin2c in Genome Data Viewer

Exon count: 17

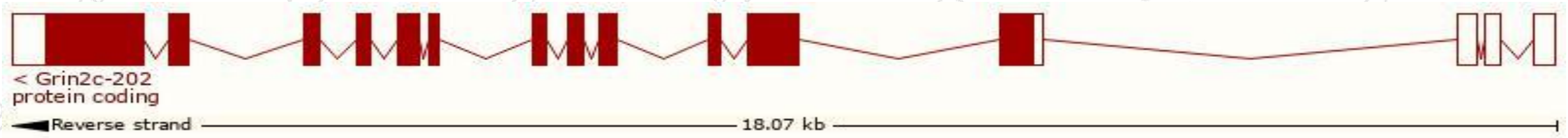
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	11	NC_000077.6 (115249169..115267297, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	11	NC_000077.5 (115110483..115128557, complement)

Transcript information（Ensembl）

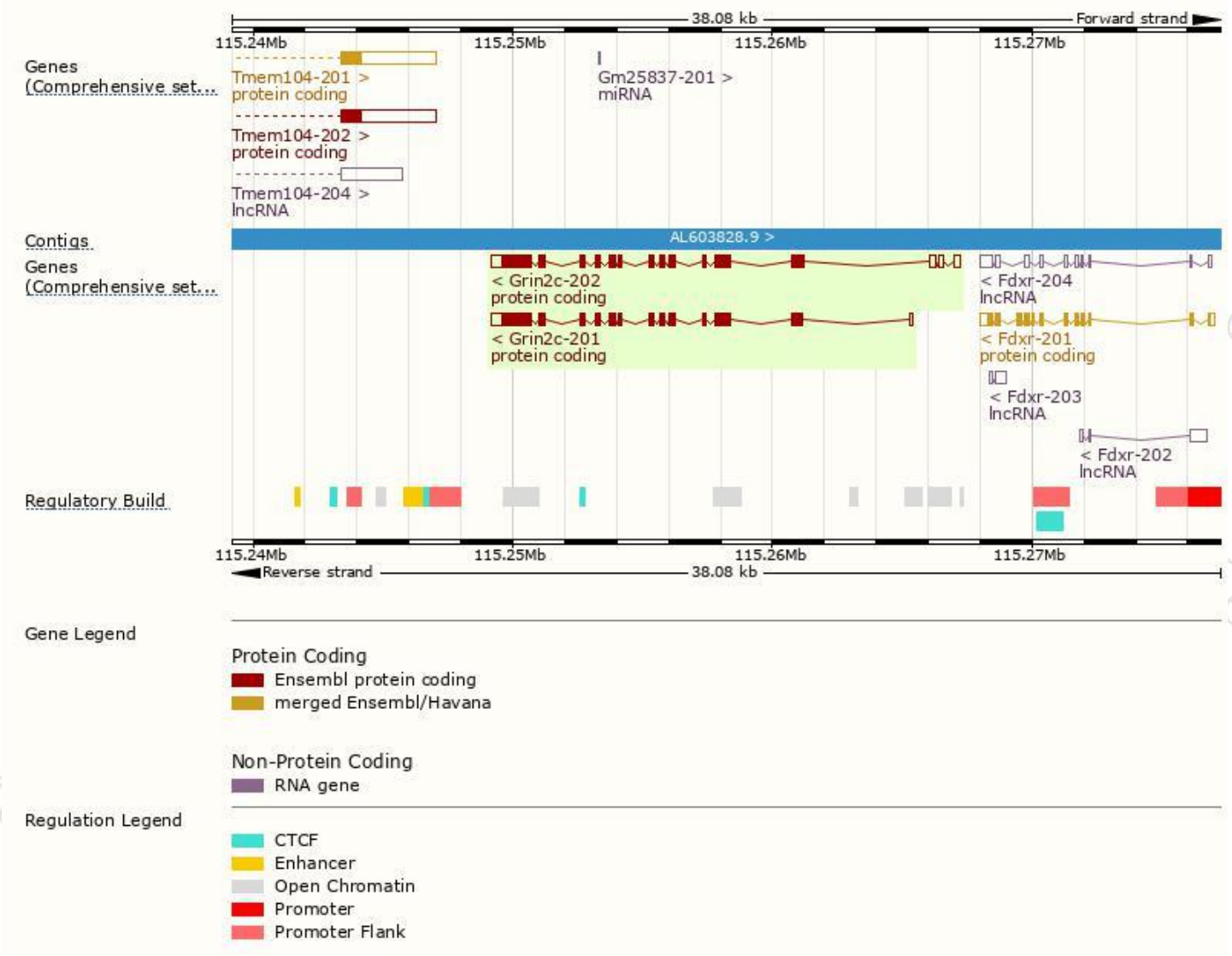
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Grin2c-202	ENSMUST00000106554.1	4895	1239aa	Protein coding	CCDS25624	A2A6S2 Q01098	TSL:5 GENCODE basic APPRIS P1
Grin2c-201	ENSMUST00000003351.12	4279	1239aa	Protein coding	CCDS25624	A2A6S2 Q01098	TSL:5 GENCODE basic APPRIS P1

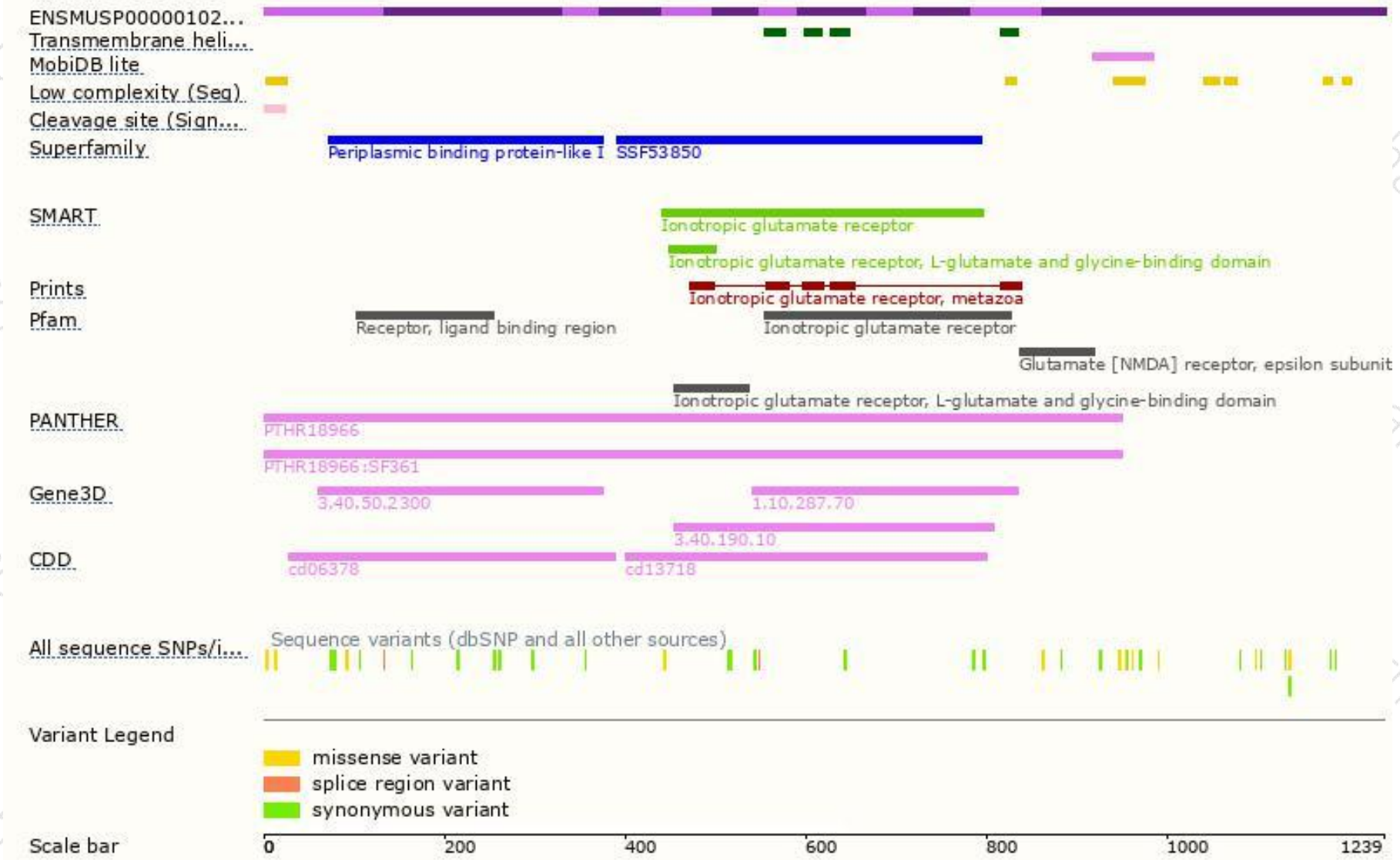
The strategy is based on the design of *Grin2c-202* transcript,The transcription is shown below



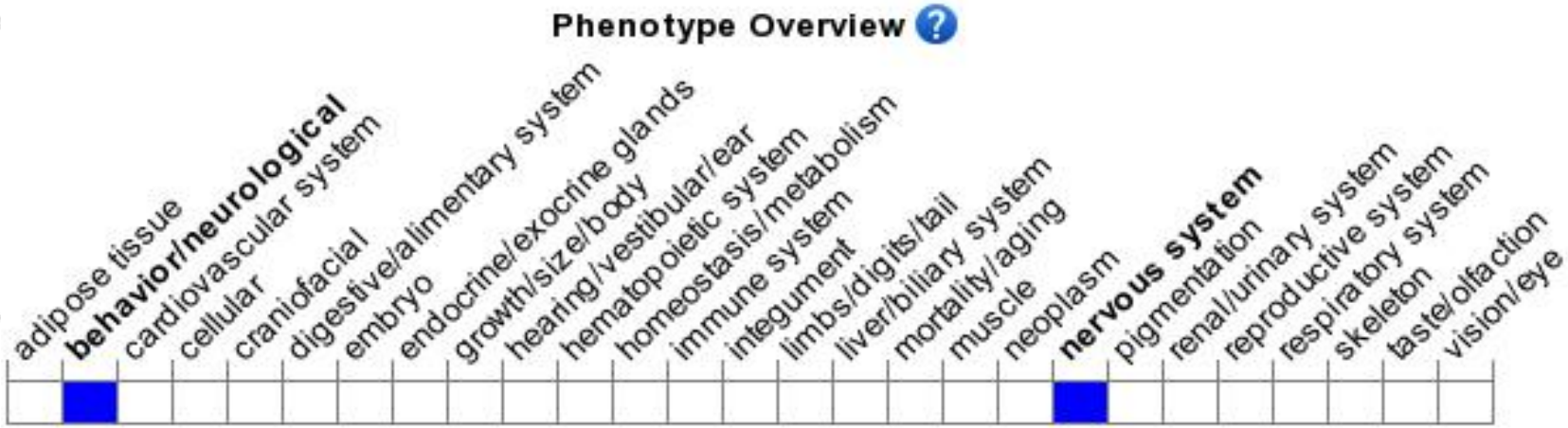
Genomic location distribution



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/).

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

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