Grin3b Cas9-CKO Strategy

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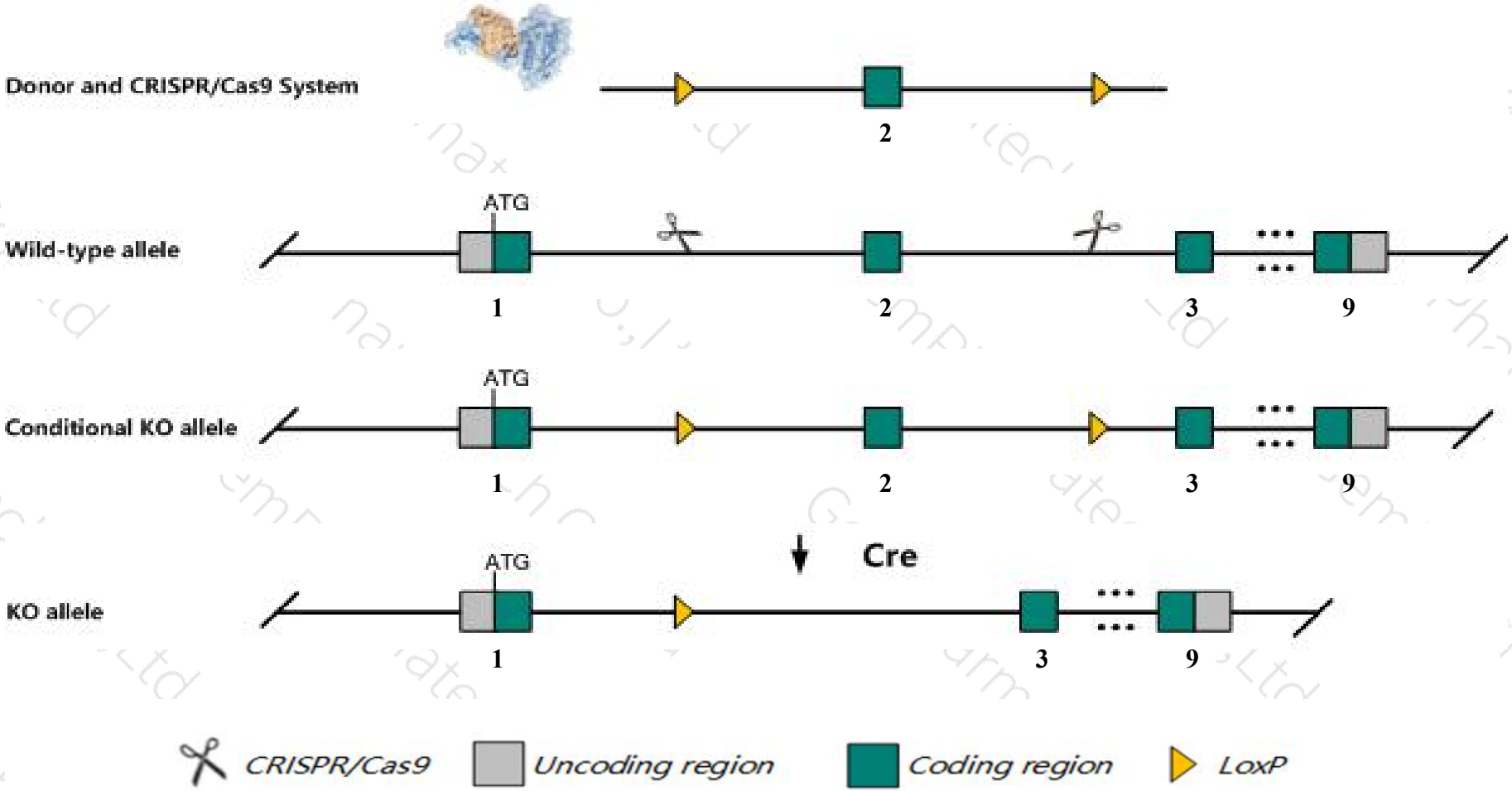
Project Overview

Project Name	***Grin3b***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Grin3b* gene. The schematic diagram is as follows:



Technical routes

- The *Grin3b* gene has 3 transcripts. According to the structure of *Grin3b* gene, exon2 of *Grin3b-201* (ENSMUST00000045085.7) transcript is recommended as the knockout region.The region contains 593bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Grin3b* gene. The brief process is as follows:CRISPR/Cas9 system and Donor were microinjected into the fertilized eggs of C57BL/6JGpt 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/6JGpt mice.

- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

Notice

- According to the existing MGI data,mice homozygous for a null allele show a mild impairment in motor learning or coordination, reduced home cage activity, a highly increased social interaction with familiar cagemates in their home cage but moderately increased anxiety-like behavior and reduced social interaction in a new environment.
- The effect on transcript *Grin3b*-202&203 is unknown.
- The floxed region is near to the C-terminal of *Tmem259* gene,this strategy may influence the regulatory function of the C-terminal of *Tmem259* gene.
- The *Grin3b* gene is located on the Chr10. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information （NCBI）

集萃药康 GemPharmatech

Grin3b glutamate receptor, ionotropic, NMDA3B [Mus musculus (house mouse)]

Gene ID: 170483, updated on 13-Mar-2020

Summary

Official Symbol	Grin3b provided by MGI
Official Full Name	glutamate receptor, ionotropic, NMDA3B provided by MGI
Primary source	MGI:MGI:2150393
See related	Ensembl:ENSMUSG00000035745
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	GluN3B, NR3B
Expression	Ubiquitous expression in testis adult (RPKM 4.1), ovary adult (RPKM 2.3) and 27 other tissues See more
Orthologs	human all

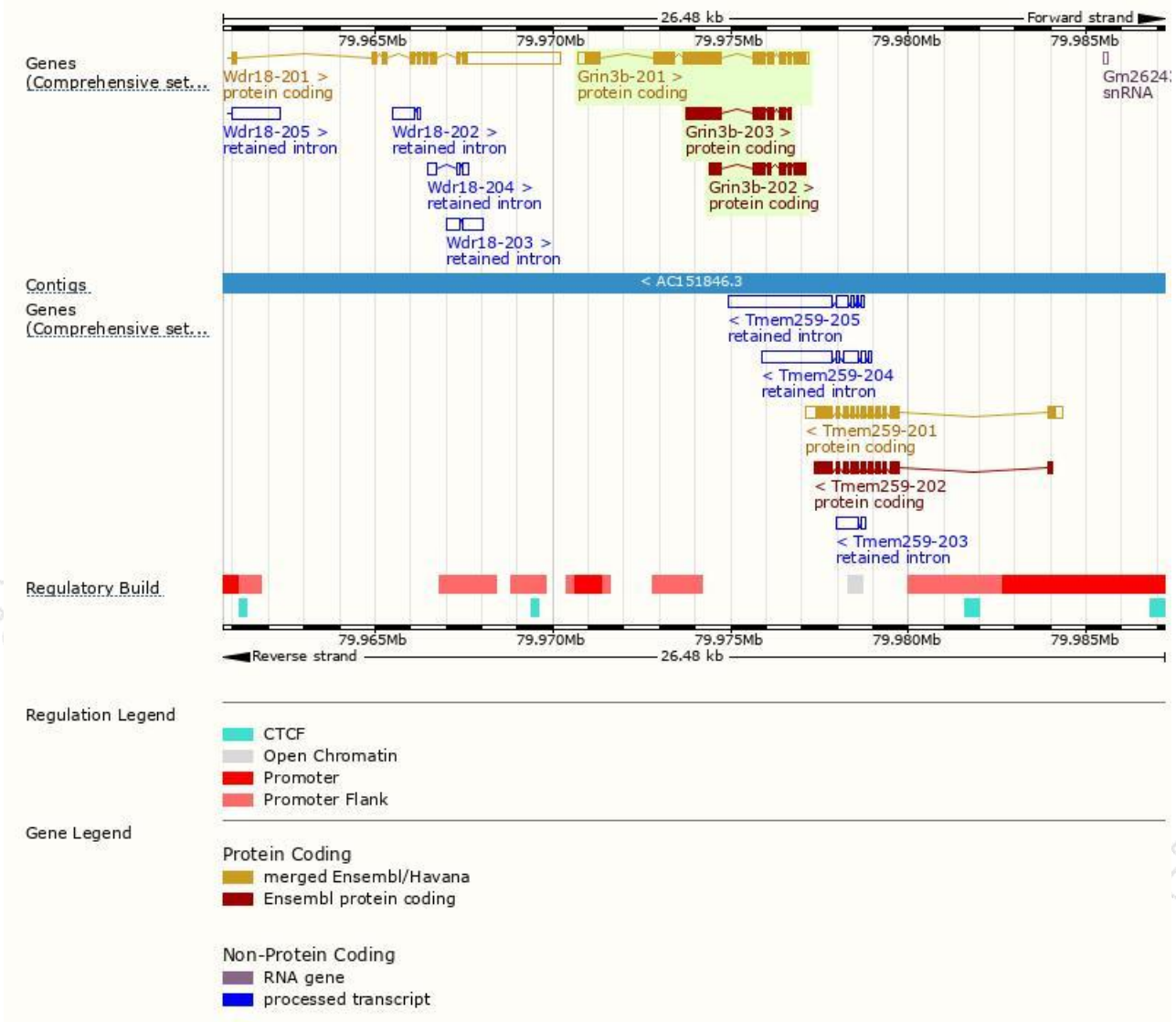
Transcript information（Ensembl）

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

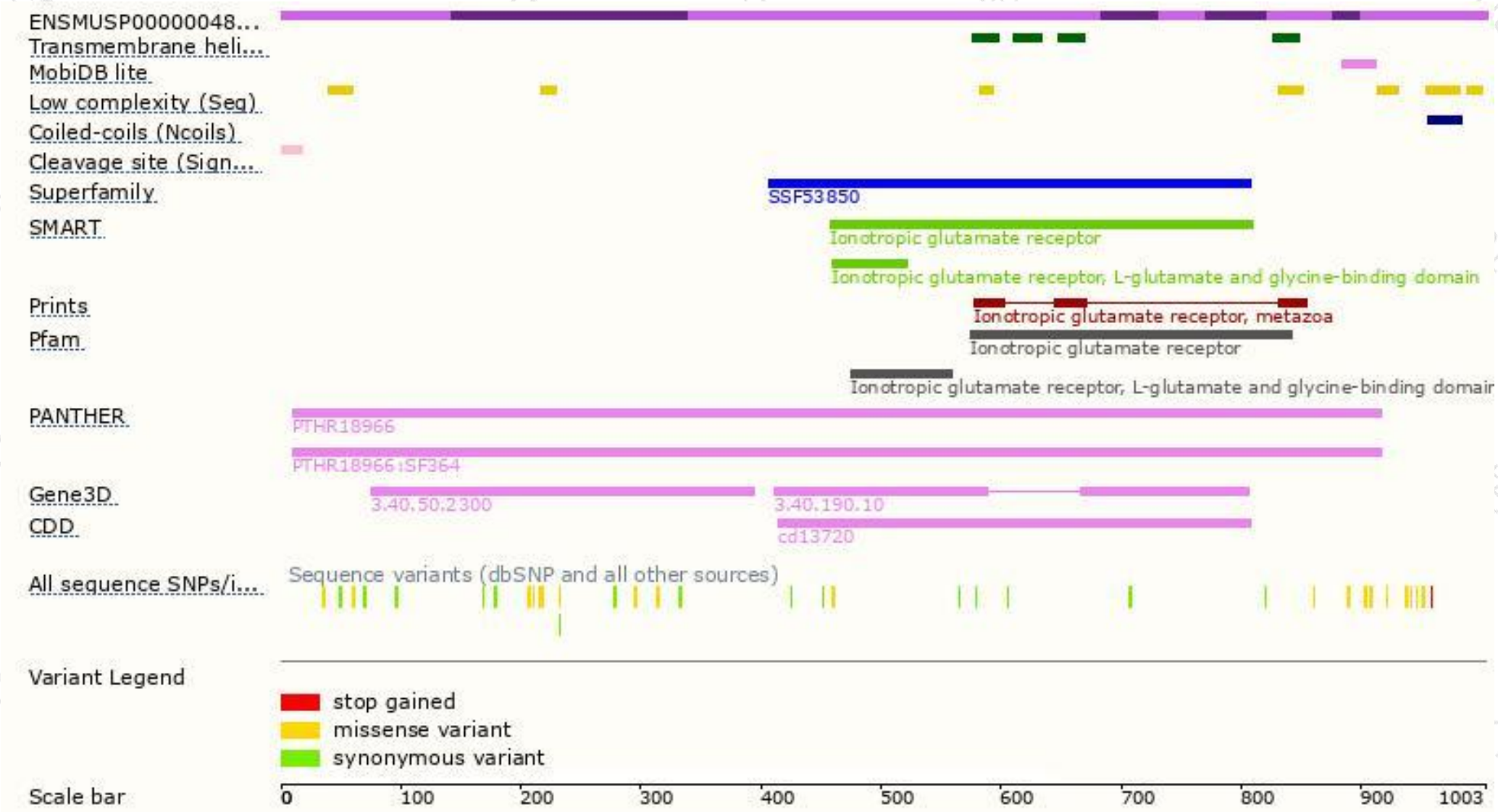
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Grin3b-201	ENSMUST00000045085.7	3283	1003aa	Protein coding	CCDS24001	Q91ZU9	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P1
Grin3b-203	ENSMUST00000149148.7	1637	542aa	Protein coding	-	F7BA29	CDS 5' incomplete TSL:1
Grin3b-202	ENSMUST00000131816.2	1197	399aa	Protein coding	-	F7ARC5	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:1

The strategy is based on the design of *Grin3b-201* transcript,The transcription is shown below

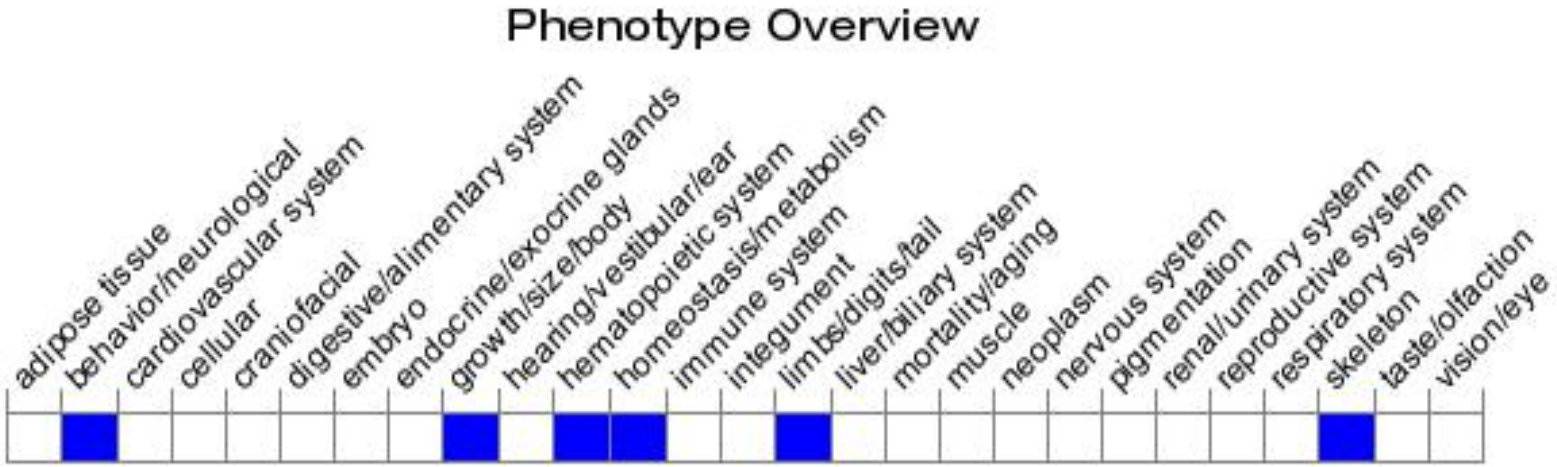
Genomic location distribution



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/).

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

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