Slc17a7 Cas9-CKO Strategy

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Project Overview

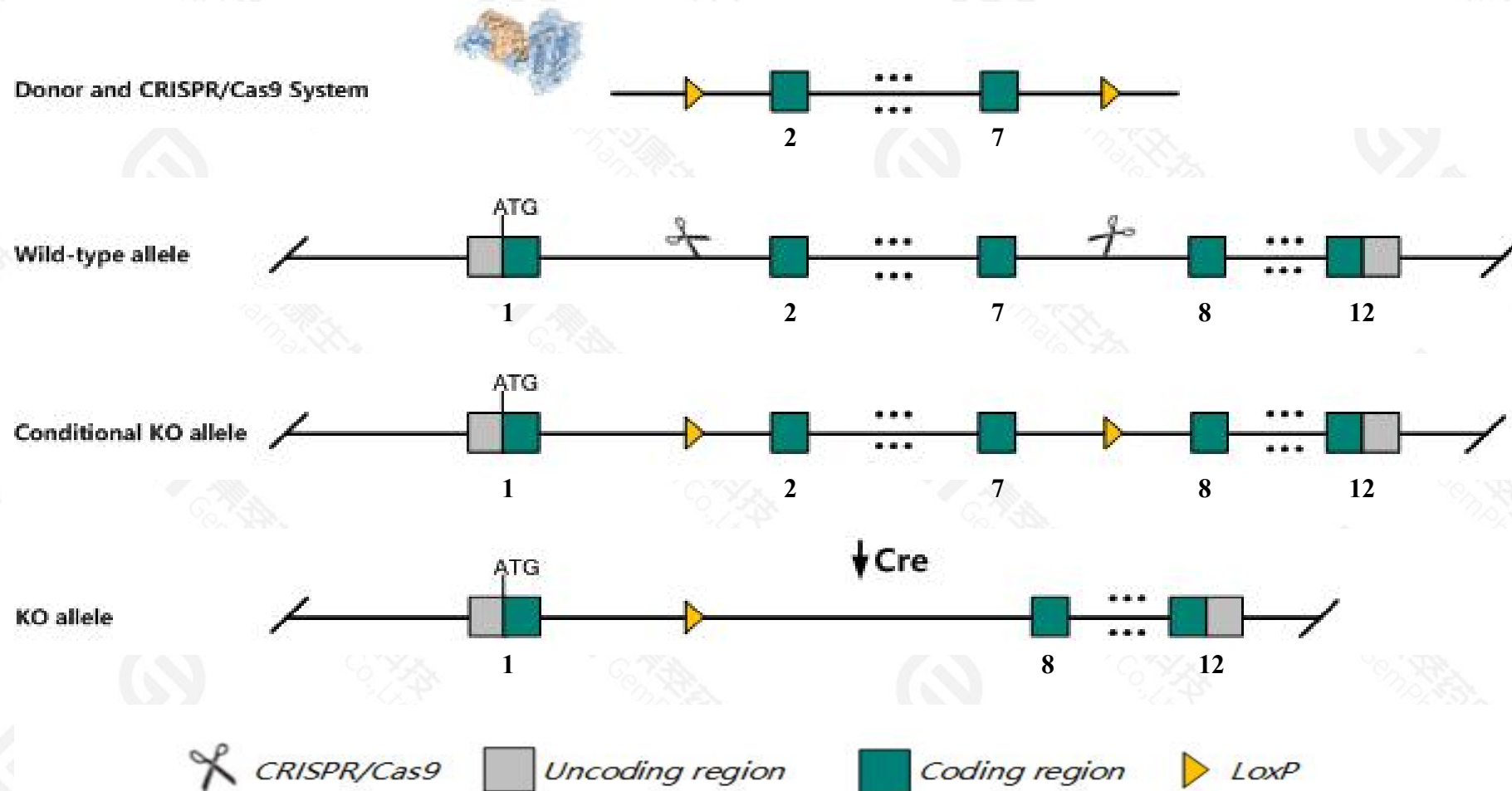|	
Project Name	*Slc17a7*
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc17a7* gene. The schematic diagram is as follows:

Technical routes

➢ The *Slc17a7* gene has 5 transcripts. According to the structure of *Slc17a7* gene, exon2-exon7 of *Slc17a7-201*(ENSMUST00000085374.7) transcript is recommended as the knockout region.The region contains Ens 805bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Slc17a7* 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,homozygous mutant mice are small and fail to thrive by 3-4 weeks of age. Abnormal excitatory post synaptic potential and currents.

➢ The *Slc17a7* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information （NCBI）

Slc17a7 solute carrier family 17 (sodium-dependent inorganic phosphate cotransporter), member 7 [Mus musculus (house mouse)]

Gene ID: 72961, updated on 7-Mar-2021

▲Summary

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Official Symbol	Slc17a7 provided by MGI
Official Full Name	solute carrier family 17 (sodium-dependent inorganic phosphate cotransporter), member 7 provided by MGI
Primary source	MGI:MGI:1920211
See related	Ensembl:ENSMUSG00000070570
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	2900052E22Rik, AI851913, Vglu, Vglut1
Expression	Biased expression in cortex adult (RPKM 249.8), frontal lobe adult (RPKM 216.5) and 3 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc17a7-201	ENSMUST00000085374.7	2915	560aa	Protein coding	CCDS52244		TSL:1 , GENCODE basic , APPRIS P1 ,
Slc17a7-202	ENSMUST00000209634.2	1860	585aa	Protein coding	-		TSL:5 , GENCODE basic ,
Slc17a7-205	ENSMUST00000211652.2	3080	No protein	Retained intron	-		TSL:2 ,
Slc17a7-204	ENSMUST00000210540.2	2722	No protein	Retained intron	-		TSL:1 ,
Slc17a7-203	ENSMUST00000210498.2	2346	No protein	Retained intron	-		TSL:NA ,

The strategy is based on the design of *Slc17a7-201* transcript,the transcription is shown below:
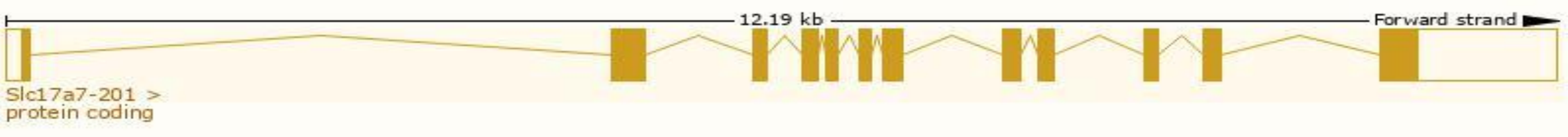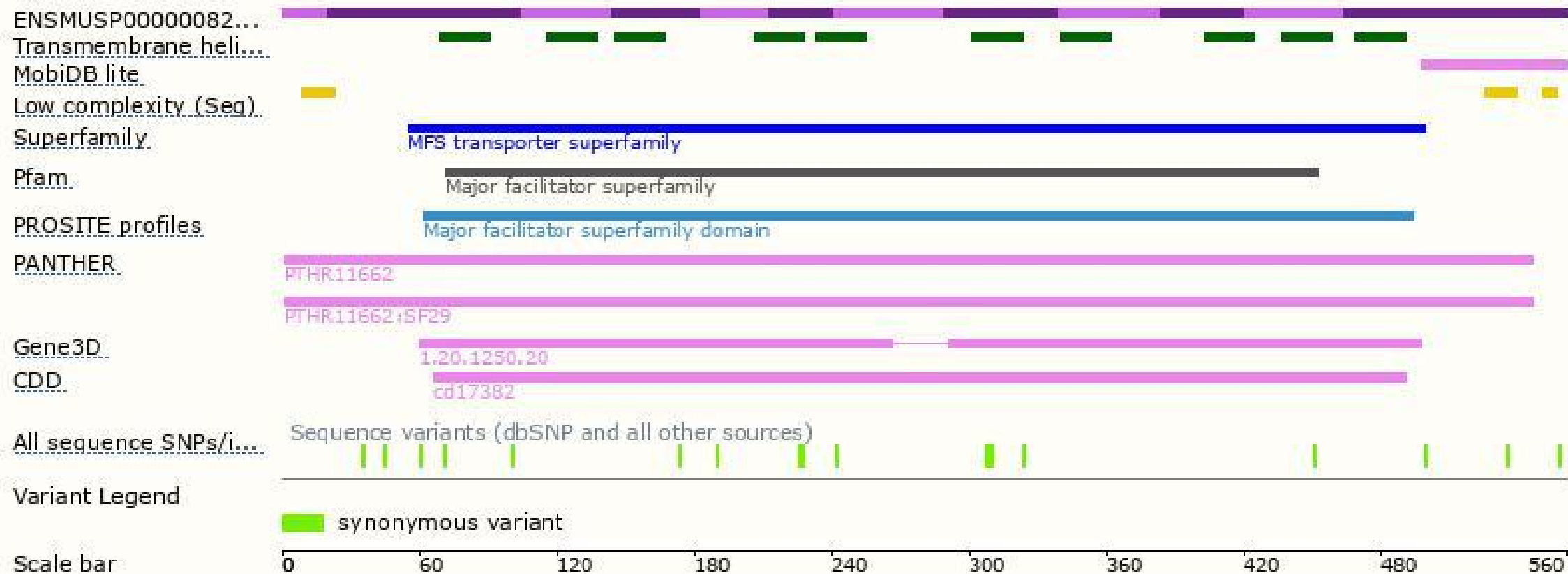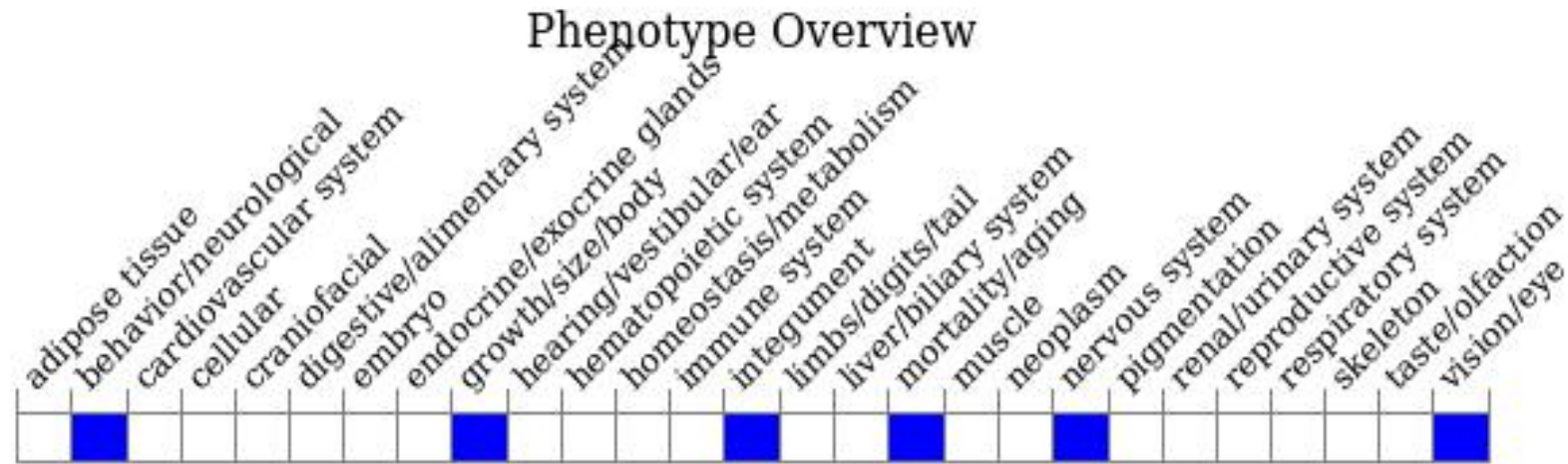
Genomic location distribution
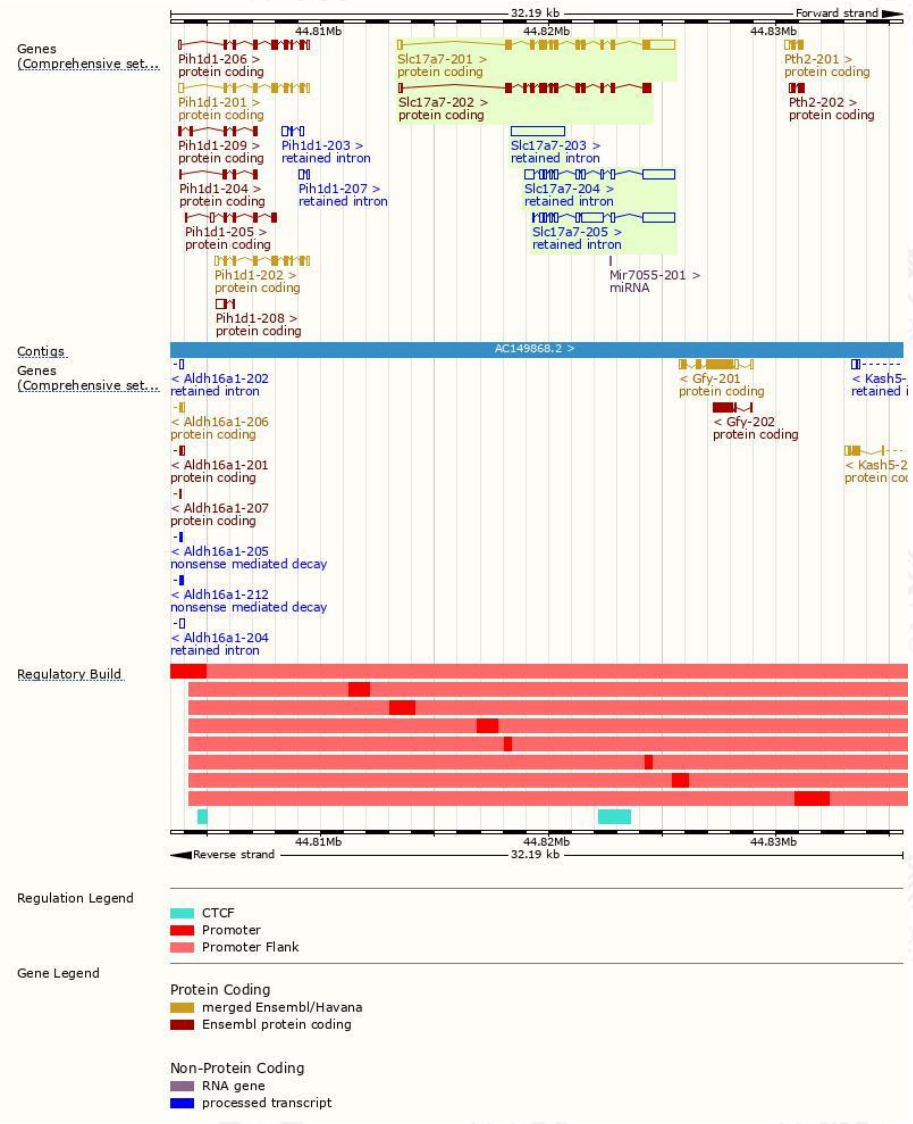
Protein domain

Mouse phenotype description(MGI)

Phenotype Overview

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,homozygous mutant mice are small and fail to thrive by 3-4 weeks of age.

Abnormal excitatory post synaptic potential and currents.

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