Slc17a6 Cas9-KO Strategy

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Reviewer: Miaomiao Cui

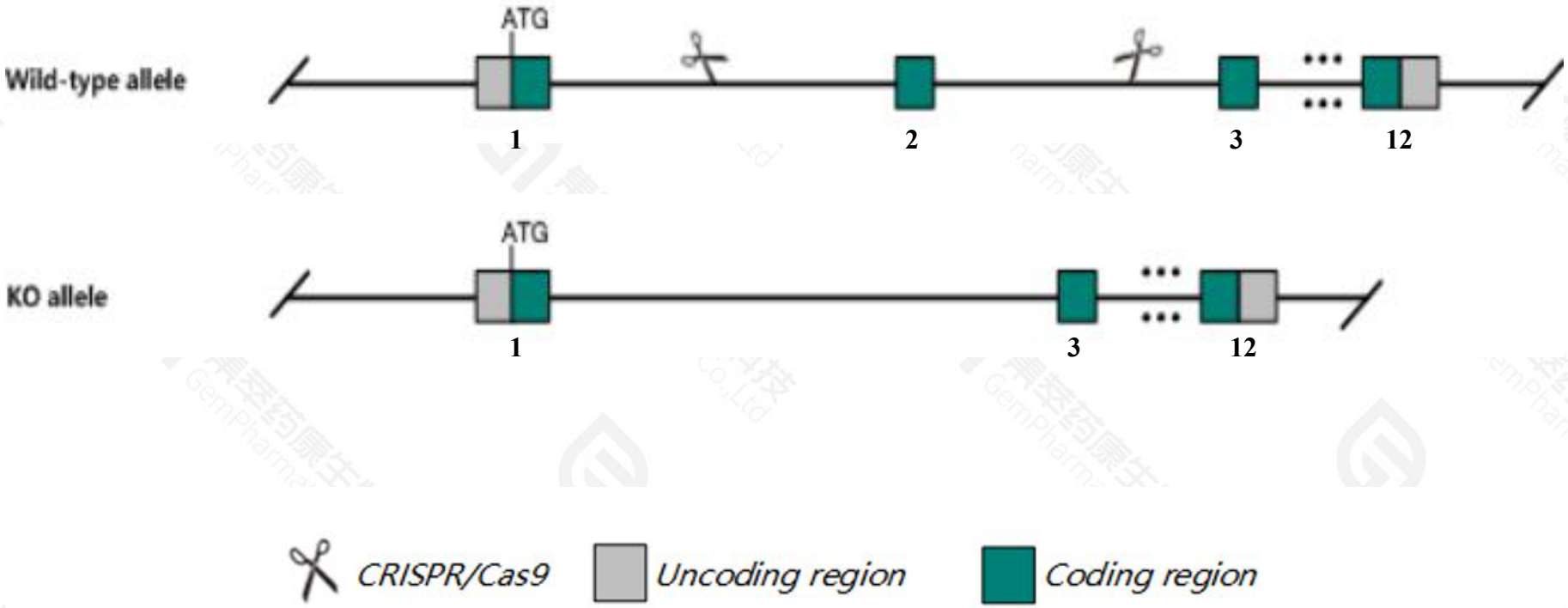
Design Date: 2021-4-23

Project Overview

Project Name	***Slc17a6***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc17a6* gene. The schematic diagram is as follows:



Technical routes

➢ The *Slc17a6* gene has 4 transcripts. According to the structure of *Slc17a6* gene, exon2 of *Slc17a6-201*(ENSMUST00000032710.7) transcript is recommended as the knockout region.The region contains 253bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Slc17a6* gene. The brief process is as follows: CRISPR/Cas9 system 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.

Notice

➢ According to the existing MGI data,mice homozygous for null mutations display neonatal lethality, respiratory failure, and abnormal nervous system physiology. Heterozygous mice for one allele display abnormal miniature EPSC and reduced responses to neuropathic pain.

➢ The *Slc17a6* 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 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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Slc17a6 solute carrier family 17 (sodium-dependent inorganic phosphate cotransporter), member 6 [Mus musculus (house mouse)]

Gene ID: 140919, updated on 2-Mar-2021

Summary

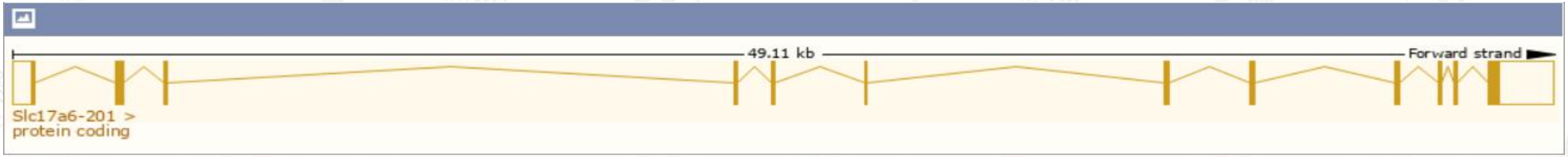
Official Symbol	Slc17a6 provided by MGI
Official Full Name	solute carrier family 17 (sodium-dependent inorganic phosphate cotransporter), member 6 provided by MGI
Primary source	MGI:MGI:2156052
See related	Ensembl:ENSMUSG00000030500
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2900073D12Rik, DNPI, VGLU, VGLUT2
Expression	Biased expression in CNS E18 (RPKM 12.2), whole brain E14.5 (RPKM 12.1) and 5 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

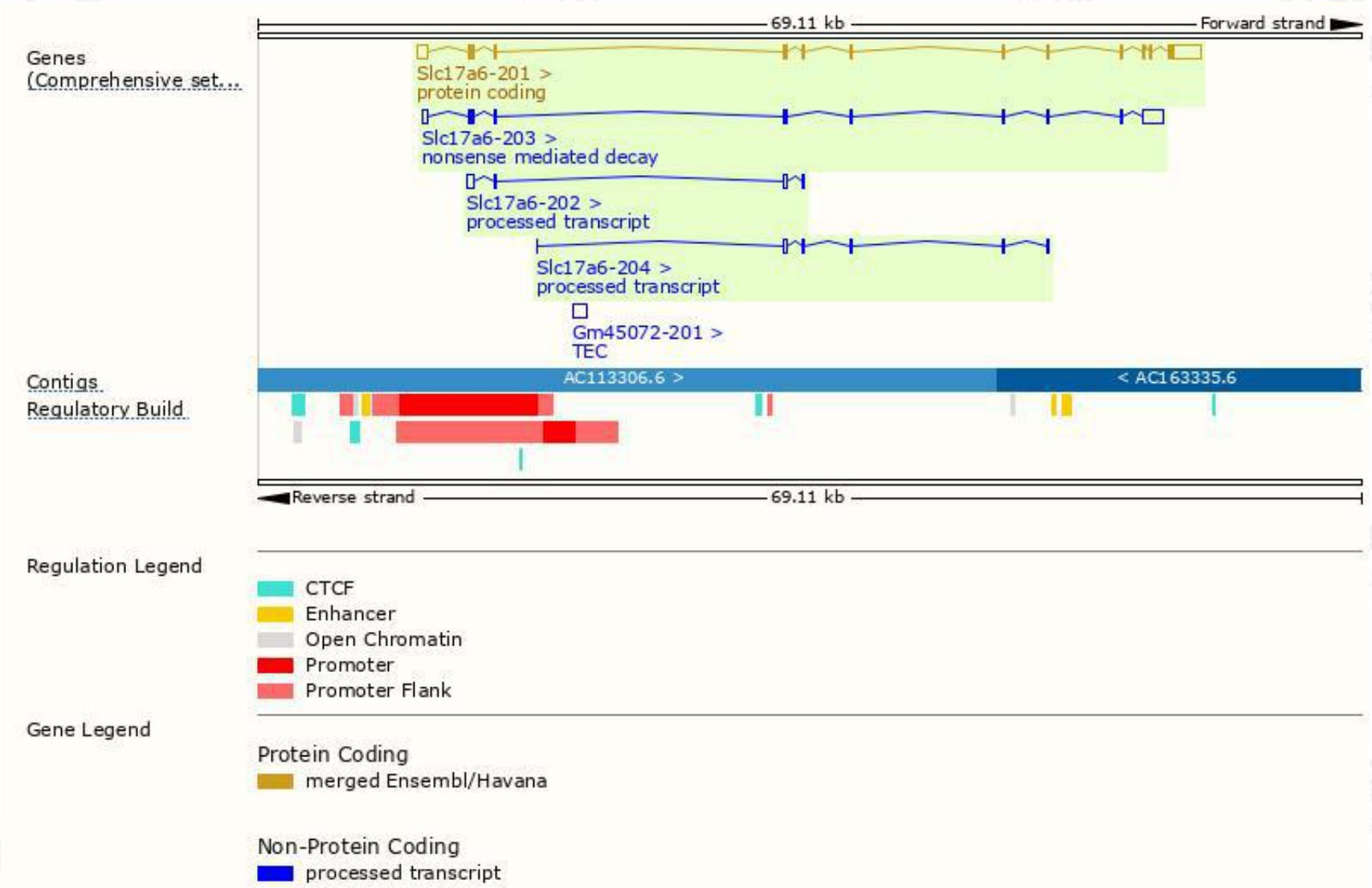
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc17a6-201	ENSMUST00000032710.7	4137	582aa	Protein coding	CCDS39969		TSL:1 , GENCODE basic , APPRIS P1 ,
Slc17a6-203	ENSMUST00000207945.2	2710	202aa	Nonsense mediated decay	-		TSL:1 ,
Slc17a6-204	ENSMUST00000208597.2	663	No protein	Processed transcript	-		TSL:5 ,
Slc17a6-202	ENSMUST00000207375.2	655	No protein	Processed transcript	-		TSL:2 ,

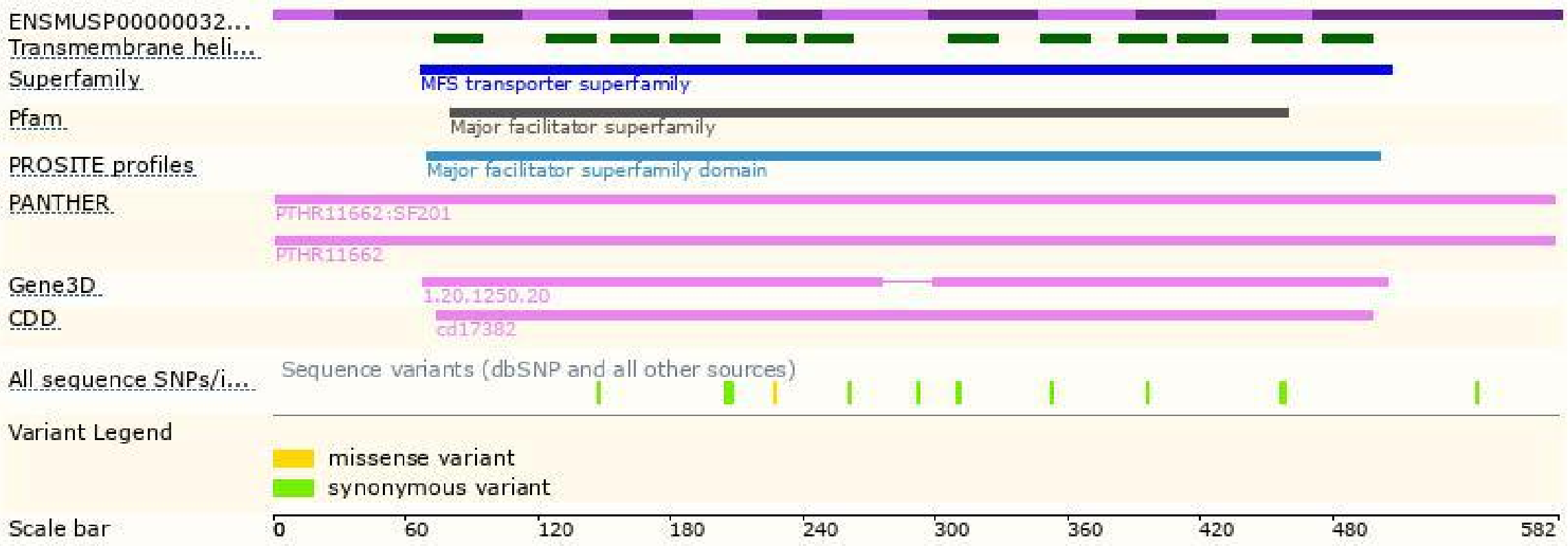
The strategy is based on the design of *Slc17a6-201* transcript,the transcription is shown below:



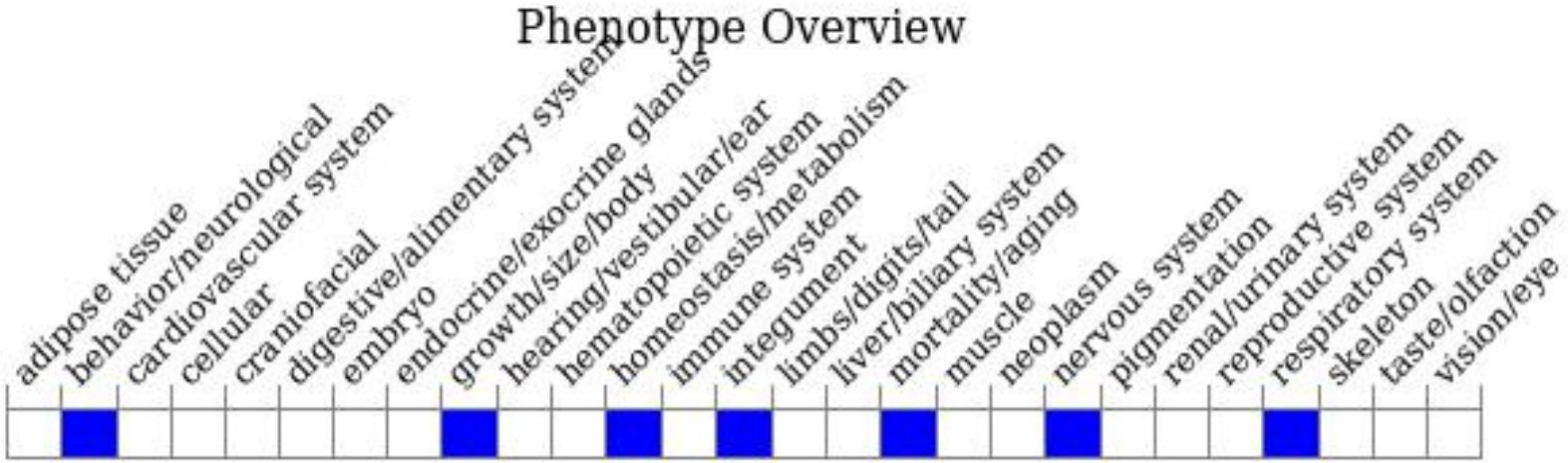
Genomic location distribution



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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