Slc5a7 Cas9-KO Strategy

Designer: Wenjing Li

Reviewer: Jiayuan Yao

Design Date: 2020/10/13

Project Overview

Project Name	***Slc5a7***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc5a7* gene. The schematic diagram is as follows:

Technical routes

➢ The *Slc5a7* gene has 3 transcripts. According to the structure of *Slc5a7* gene, exon1-exon7 of *Slc5a7-201*(ENSMUST00000095712.4) transcript is recommended as the knockout region.The region contains 895bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Slc5a7* 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,homozygous null mice display neonatal lethality with respiratory failure, hyporesponsiveness to touch, inability to sustain acetylcholine release, and abnormal neuromuscular junction morphology.

➢ The *Slc5a7* gene is located on the Chr17. 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）

集萃药康 GemPharmatech

Slc5a7 solute carrier family 5 (choline transporter), member 7 [Mus musculus (house mouse)]

Gene ID: 63993, updated on 13-Mar-2020

Summary

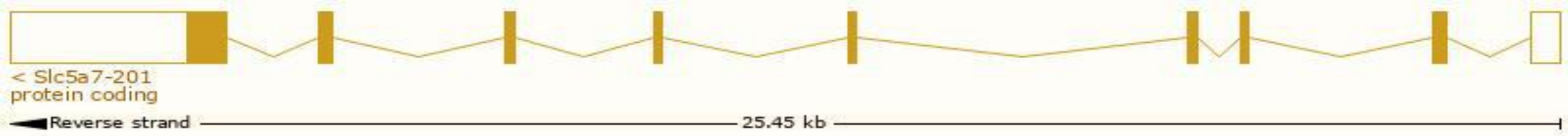
Official Symbol	Slc5a7 provided by MGI
Official Full Name	solute carrier family 5 (choline transporter), member 7 provided byMGI
Primary source	MGI:MGI:1927126
See related	Ensembl:ENSMUSG00000023945
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	CHT1
Expression	Biased expression in cerebellum adult (RPKM 2.1), mammary gland adult (RPKM 1.3) and 11 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

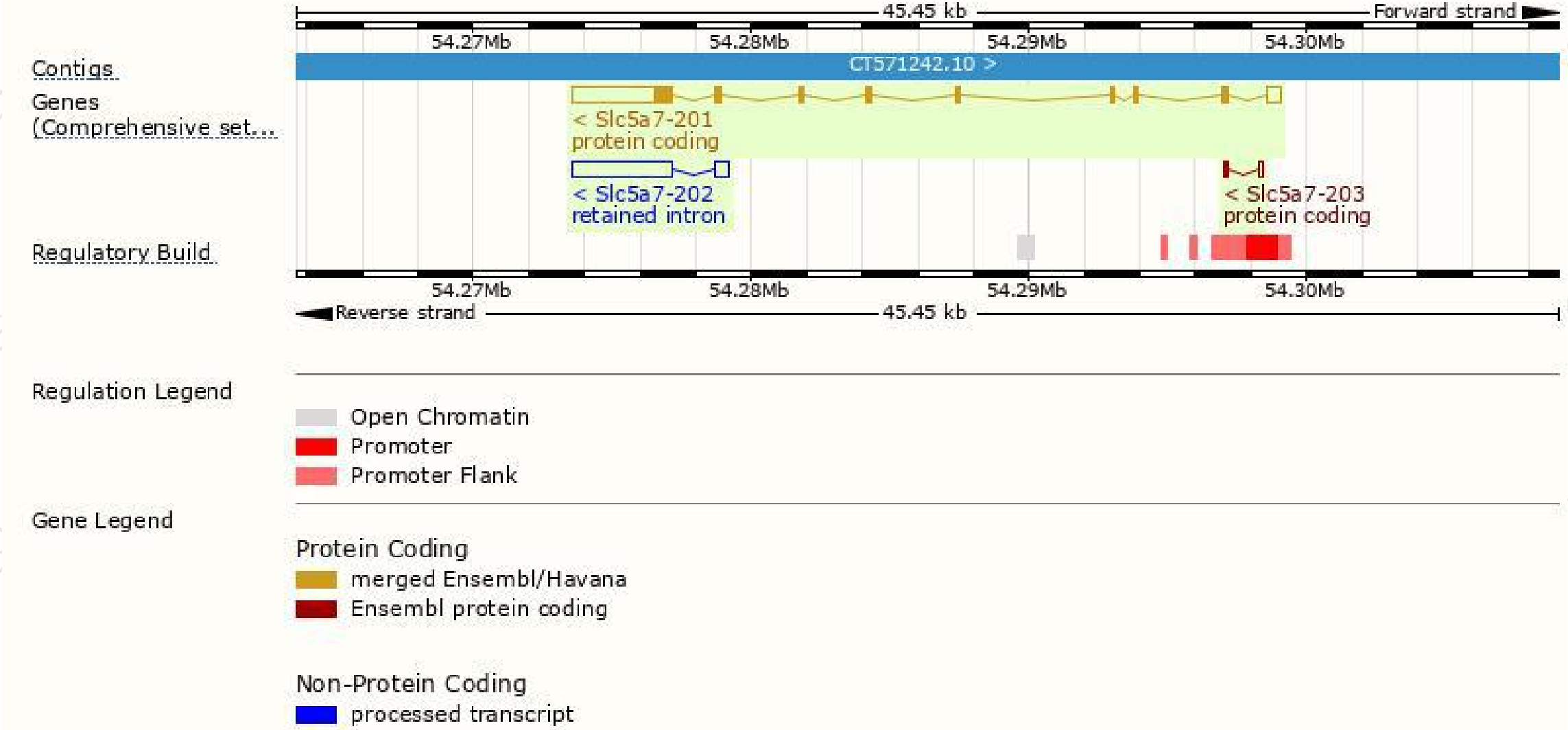
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc5a7-201	ENSMUST00000095712.4	5180	580aa	Protein coding	CCDS28885	Q8BGY9	TSL:1 GENCODE basic APPRIS P1
Slc5a7-203	ENSMUST00000233758.1	309	34aa	Protein coding	-	A0A3B2WAN5	CDS 3' incomplete
Slc5a7-202	ENSMUST00000233507.1	4084	No protein	Retained intron	-	-	

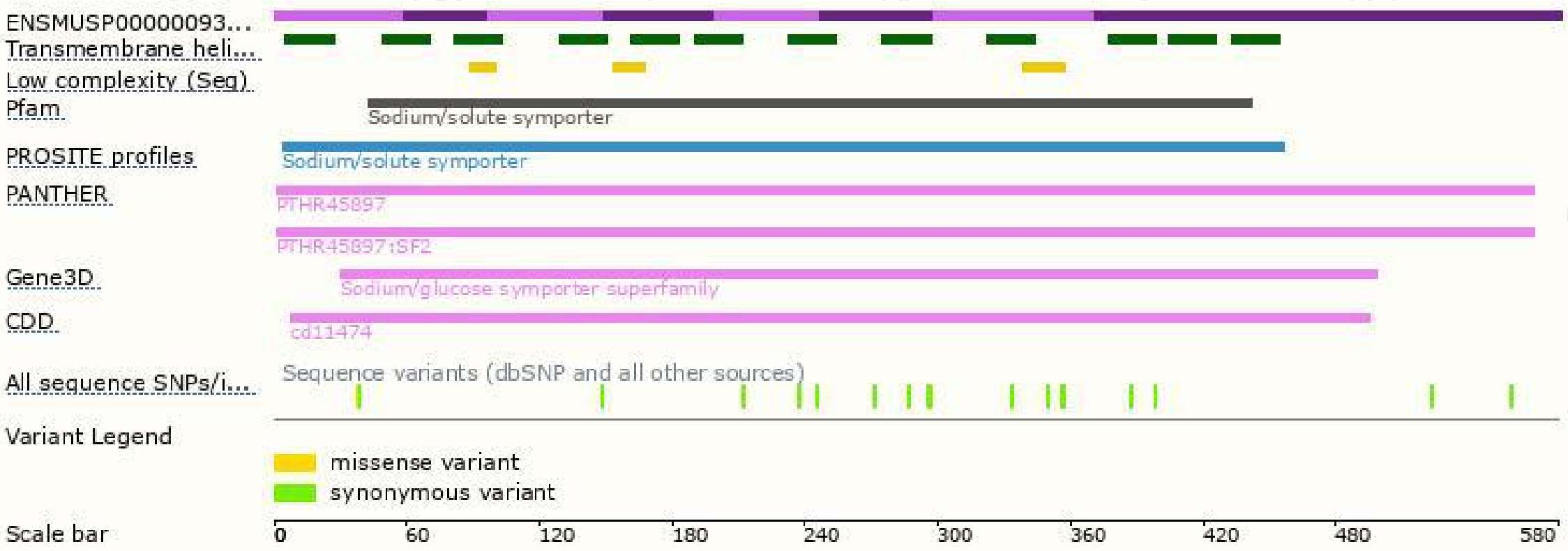
The strategy is based on the design of *Slc5a7-201* transcript,the transcription is shown below:



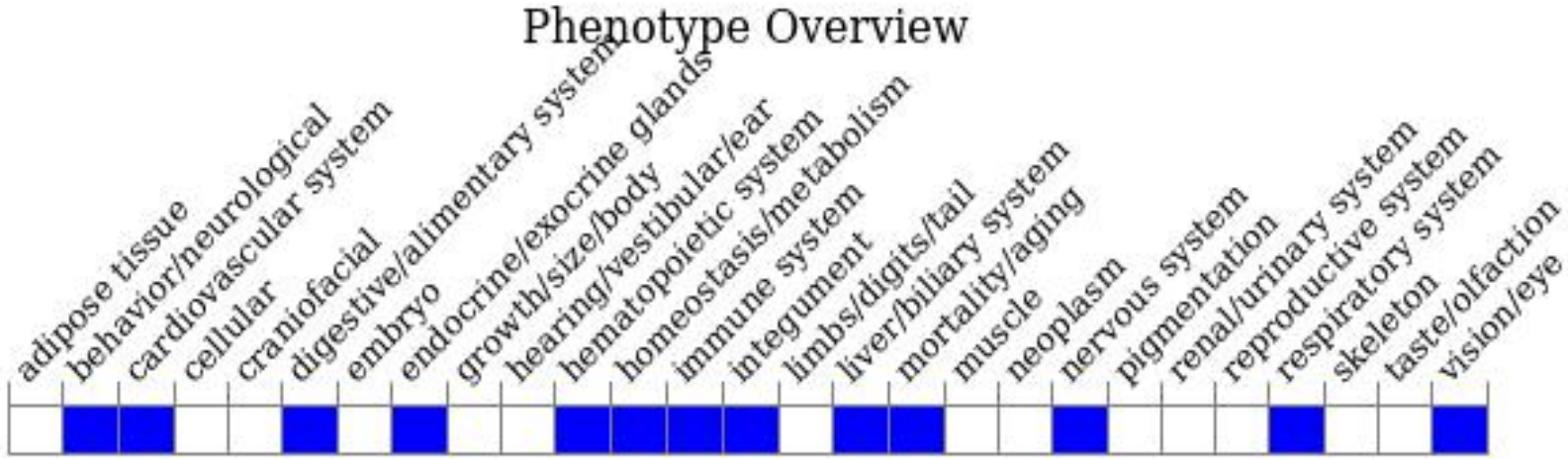
Genomic location distribution



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,homozygous null mice display neonatal lethality with respiratory failure, hyporesponsiveness to touch, inability to sustain acetylcholine release, and abnormal neuromuscular junction morphology.

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

Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd