Slc44a2 Cas9-CKO Strategy

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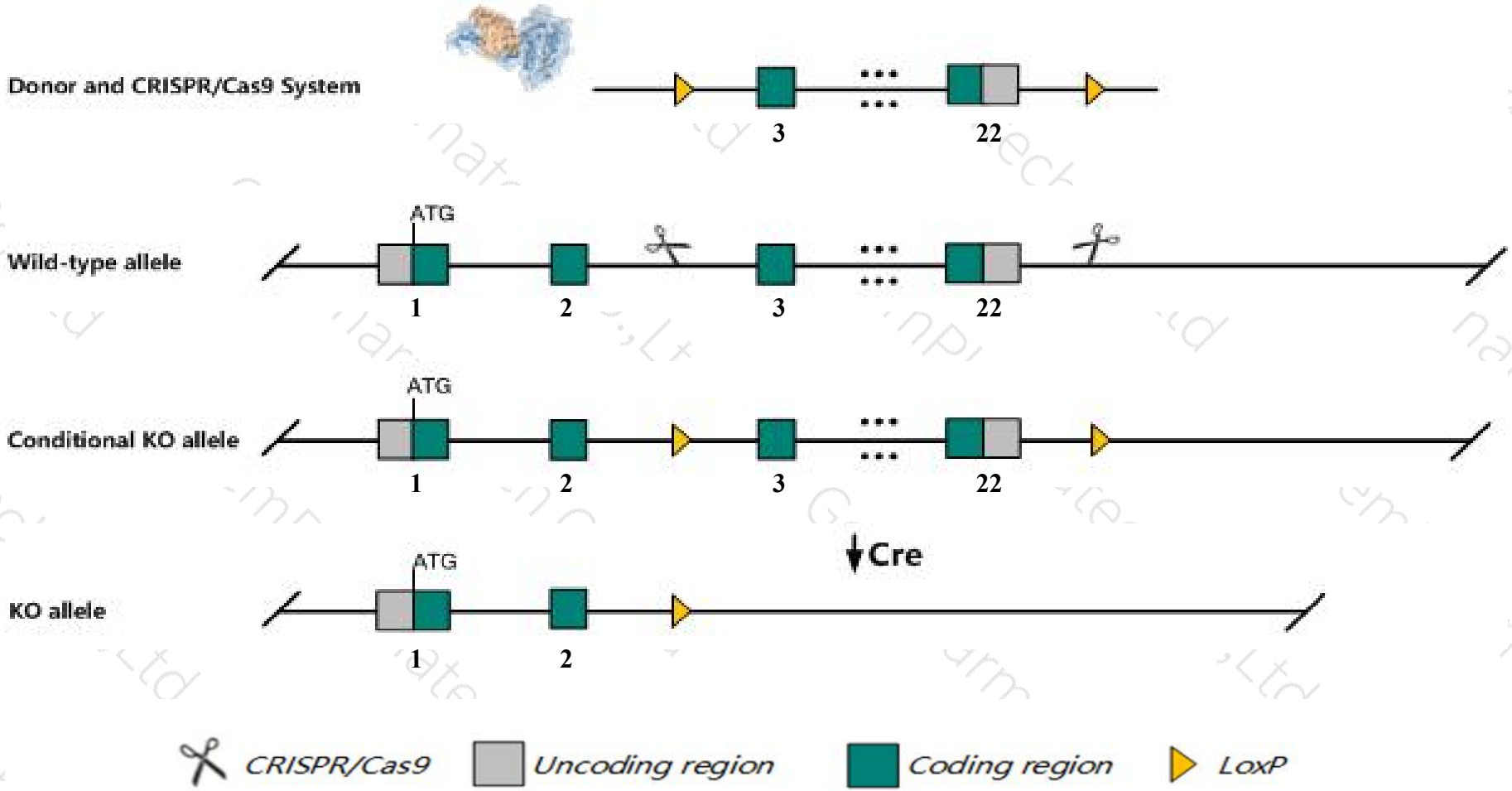
Project Overview

Project Name	***Slc44a2***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc44a2* gene. The schematic diagram is as follows:



Technical routes

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- The *Slc44a2* gene has 10 transcripts. According to the structure of *Slc44a2* gene, exon3-exon22 of *Slc44a2-201* (ENSMUST00000034697.7) transcript is recommended as the knockout region.The region contains most of the coding sequence.Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Slc44a2* 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 knock-out allele exhibit cochlear hair cell loss, spiral ganglion degeneration, and progressive sensorineural hearing loss.

- The *Slc44a2* gene is located on the Chr9. 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）

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Slc44a2 solute carrier family 44, member 2 [*Mus musculus* (house mouse)]

Gene ID: 68682, updated on 18-Feb-2020

Summary

Official Symbol	Slc44a2 provided by MGI
Official Full Name	solute carrier family 44, member 2 provided by MGI
Primary source	MGI:MGI:1915932
See related	Ensembl:ENSMUSG00000057193
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	CTL2; 1110028E10Rik
Expression	Broad expression in thymus adult (RPKM 112.2), lung adult (RPKM 80.3) and 23 other tissues See more
Orthologs	human all

Genomic context

Location: 9; 9 A3

See Slc44a2 in Genome Data Viewer

Exon count: 25

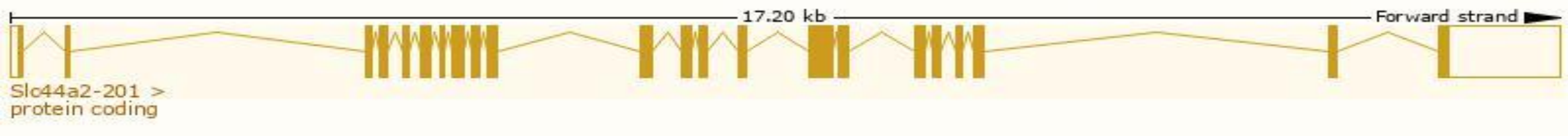
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	9	NC_000075.6 (21320719..21355028)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	9	NC_000075.5 (21142296..21159472)

Transcript information（Ensembl）

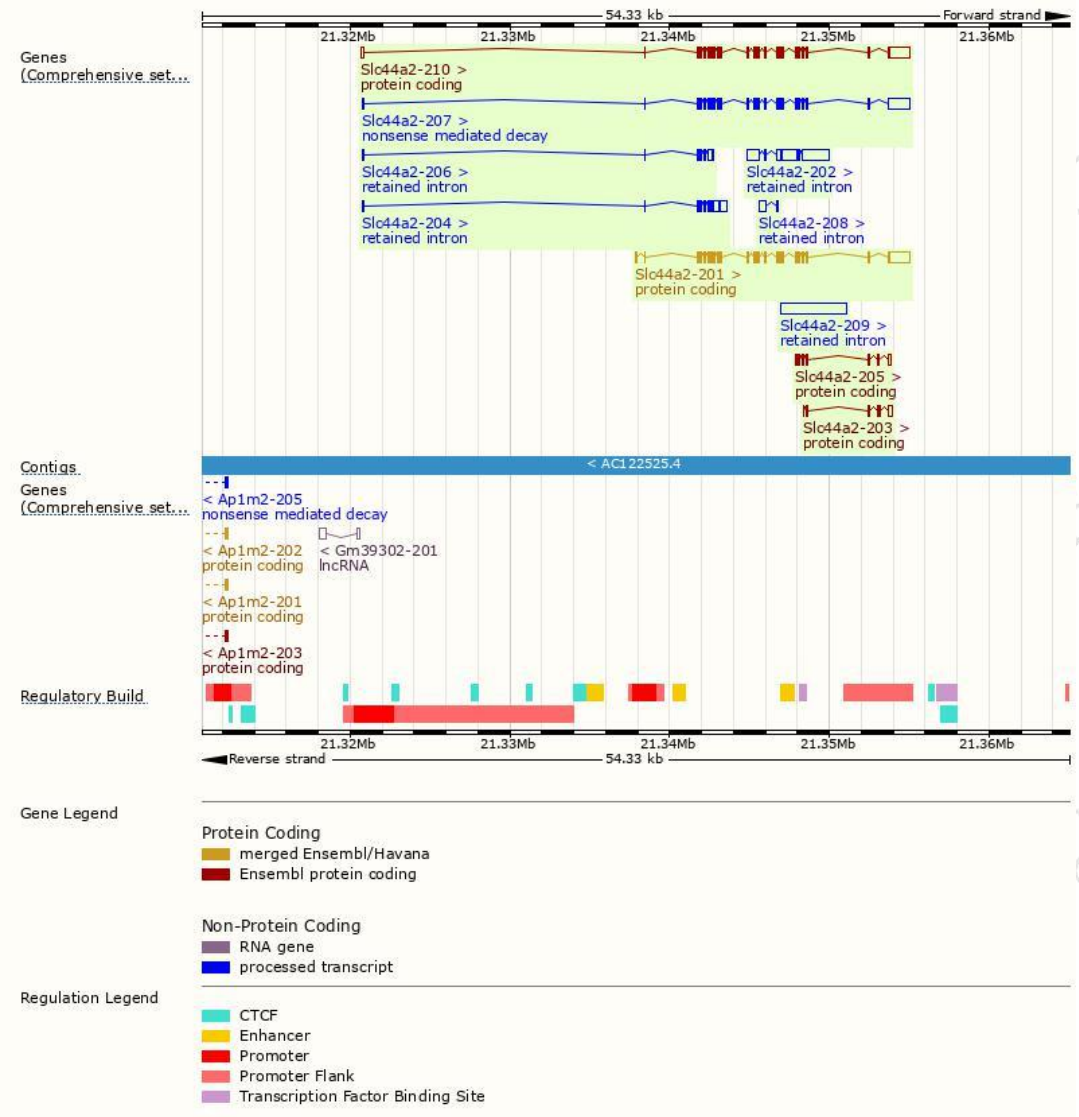
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc44a2-201	ENSMUST00000034697.7	3456	706aa	Protein coding	CCDS22903	Q8BY89	TSL:1 GENCODE basic APPRIS P2
Slc44a2-210	ENSMUST00000217461.1	3478	704aa	Protein coding	-	Q8BY89	TSL:1 GENCODE basic APPRIS ALT1
Slc44a2-205	ENSMUST00000214268.1	684	170aa	Protein coding	-	A0A1L1SU40	CDS 5' incomplete TSL:5
Slc44a2-203	ENSMUST00000213535.1	679	111aa	Protein coding	-	A0A1L1SS87	CDS 5' incomplete TSL:3
Slc44a2-207	ENSMUST00000215574.1	3428	554aa	Nonsense mediated decay	-	A0A1L1SVG6	TSL:1
Slc44a2-209	ENSMUST00000217453.1	4077	No protein	Retained intron	-	-	TSL:NA
Slc44a2-202	ENSMUST00000213499.1	3744	No protein	Retained intron	-	-	TSL:2
Slc44a2-204	ENSMUST00000213758.1	1315	No protein	Retained intron	-	-	TSL:1
Slc44a2-206	ENSMUST00000215528.1	713	No protein	Retained intron	-	-	TSL:5
Slc44a2-208	ENSMUST00000216266.1	515	No protein	Retained intron	-	-	TSL:1

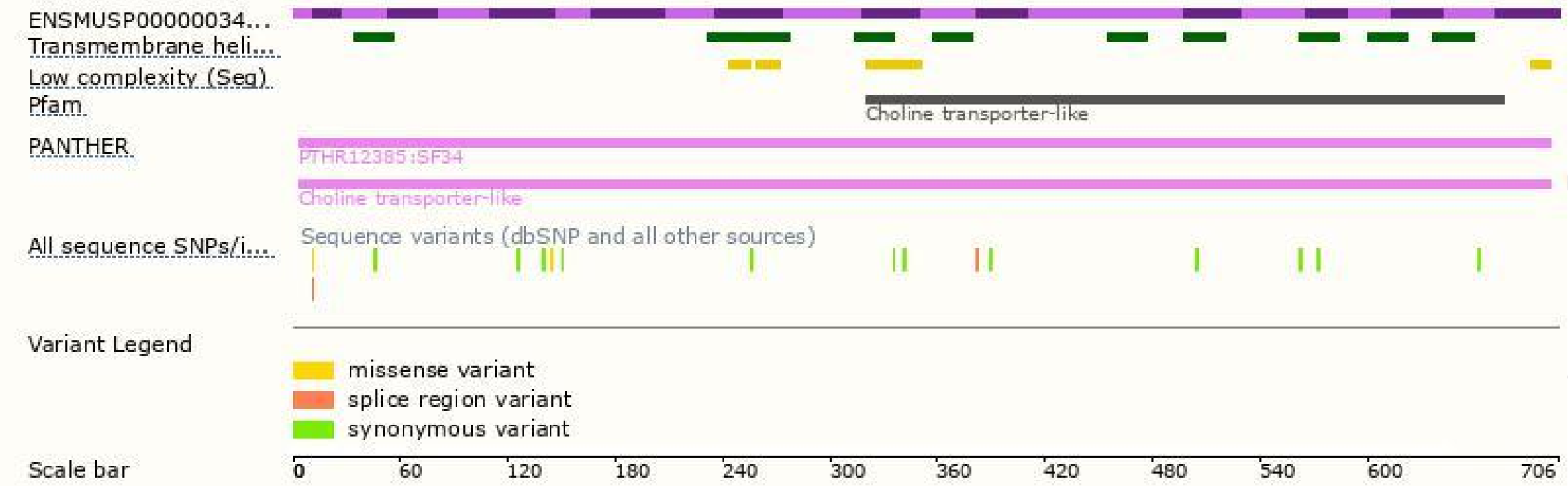
The strategy is based on the design of *Slc44a2-201* transcript,The transcription is shown below



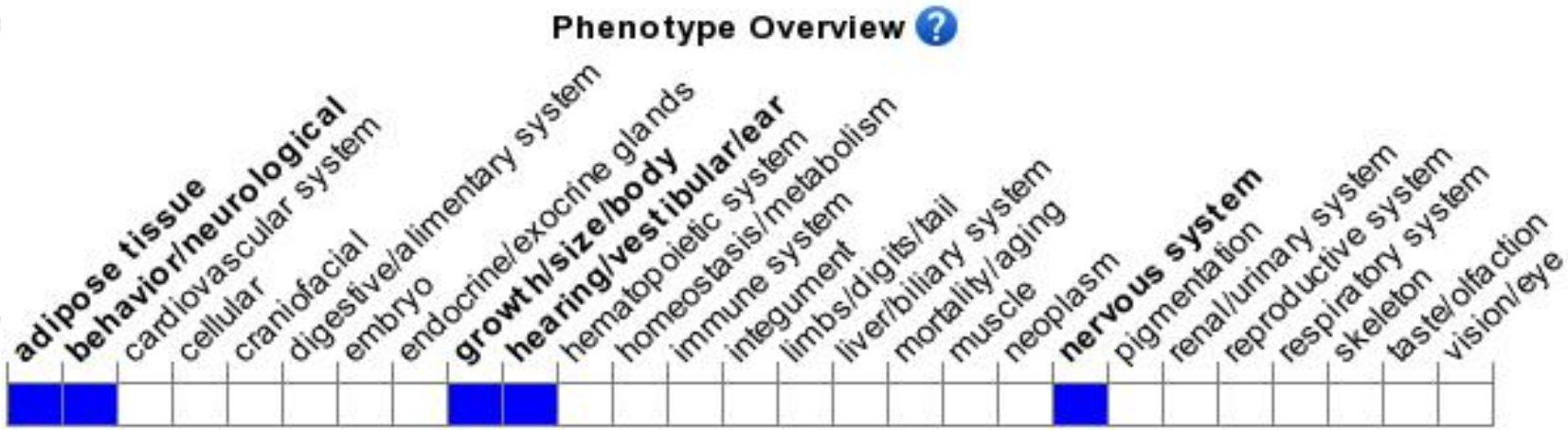
Genomic location distribution



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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