Slc23a1 Cas9-CKO Strategy

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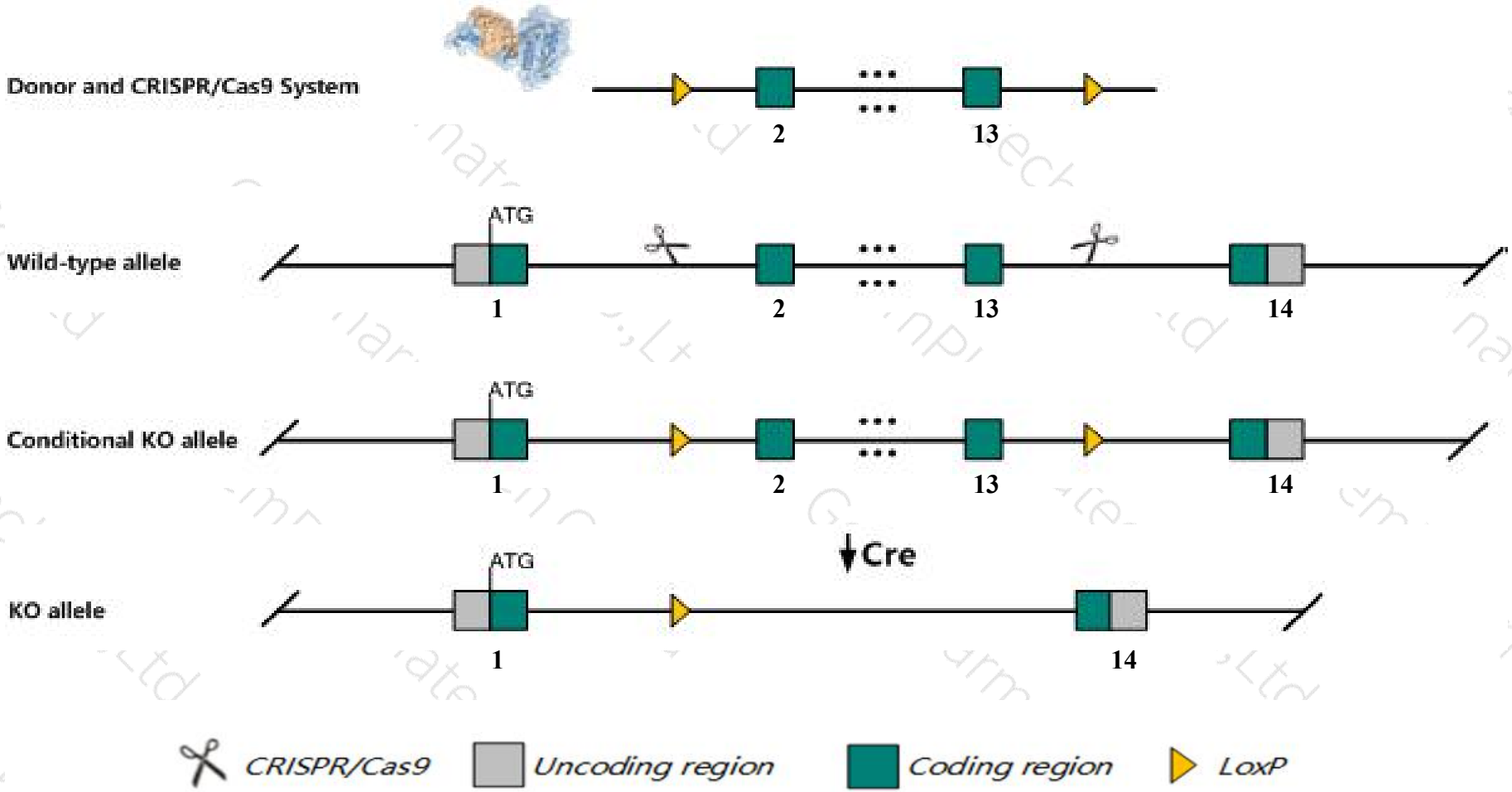
Project Overview

Project Name	***Slc23a1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc23a1* gene. The schematic diagram is as follows:



Technical routes

- The *Slc23a1* gene has 4 transcripts. According to the structure of *Slc23a1* gene, exon2-exon13 of *Slc23a1-201* (ENSMUST00000025212.7) transcript is recommended as the knockout region.The region contains 1534bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Slc23a1* 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 abnormal ascorbate homeostasis and early postnatal lethality associated with lethargy and lack of gastric milk. Heterozygous mice of homozgous dams exhibit a similar phenotype.

- The *Slc23a1* gene is located on the Chr18. 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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Slc23a1 solute carrier family 23 (nucleobase transporters), member 1 [*Mus musculus* (house mouse)]

Gene ID: 20522, updated on 10-Oct-2019

Summary

Official Symbol Slc23a1 provided by MGI
Official Full Name solute carrier family 23 (nucleobase transporters), member 1 provided by MGI
Primary source MGI:MGI:1341903
See related Ensembl:ENSMUSG00000024354
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 SVCT1; YSPL3; Slc23a2; D18Ucla2
Expression Biased expression in kidney adult (RPKM 78.2), liver adult (RPKM 28.3) and 6 other tissues See more
Orthologs human all

Genomic context

Location: 18 B2; 18 19.17 cM

See Slc23a1 in Genome Data Viewer

Exon count: 19

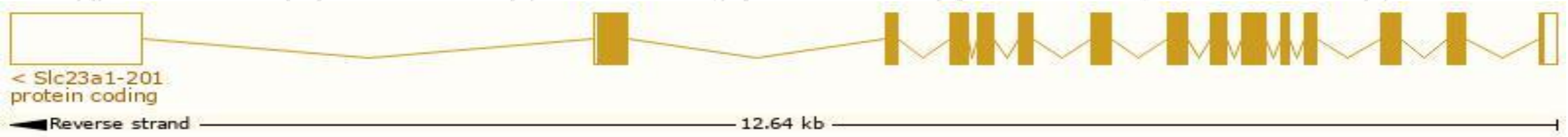
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	18	NC_000084.6 (35604224..35629845, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	18	NC_000084.5 (35774258..35786881, complement)

Transcript information（Ensembl）

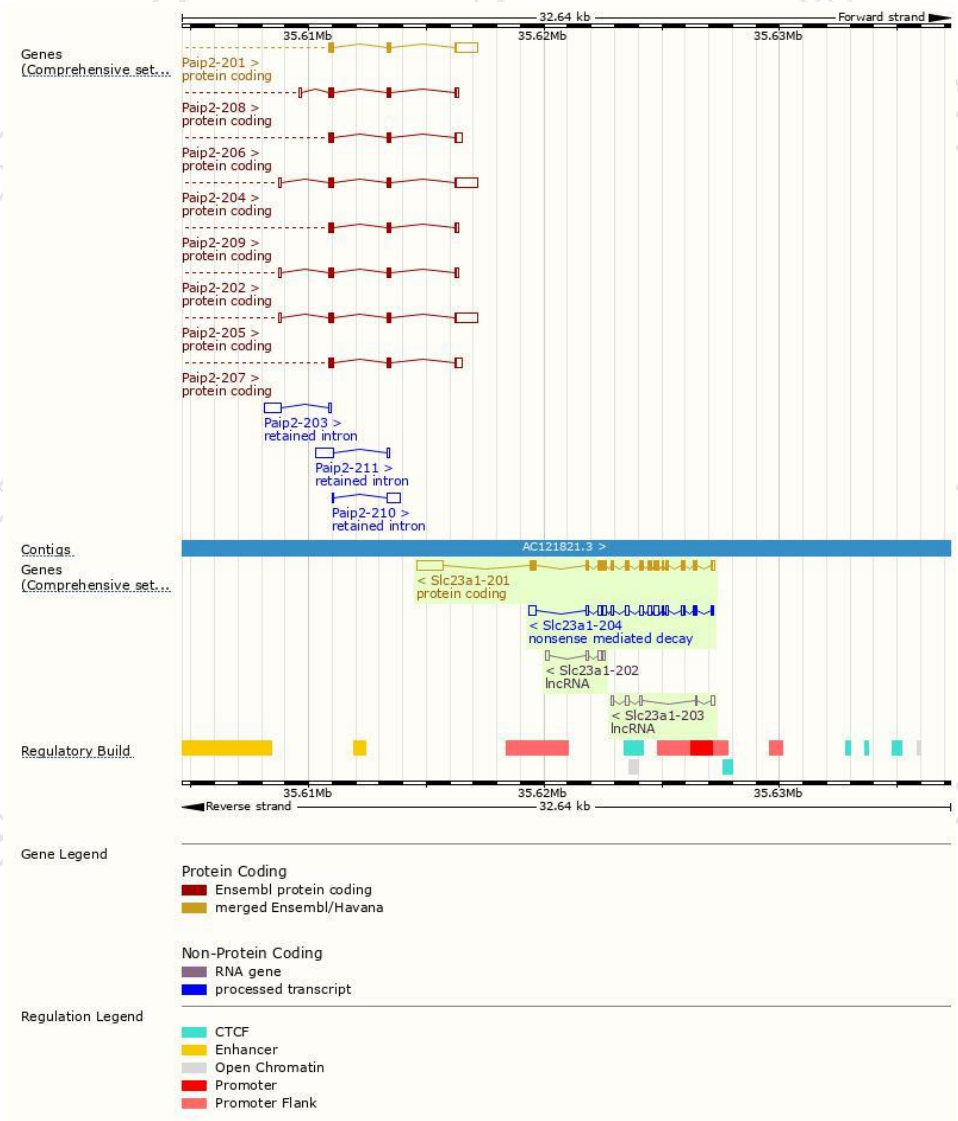
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc23a1-201	ENSMUST00000025212.7	3026	605aa	Protein coding	CCDS29144	Q9Z2J0	TSL:1 GENCODE basic APPRIS P1
Slc23a1-204	ENSMUST00000237305.1	1889	53aa	Nonsense mediated decay	-	D6RDS7	
Slc23a1-203	ENSMUST00000236196.1	565	No protein	lncRNA	-	-	
Slc23a1-202	ENSMUST00000235744.1	498	No protein	lncRNA	-	-	

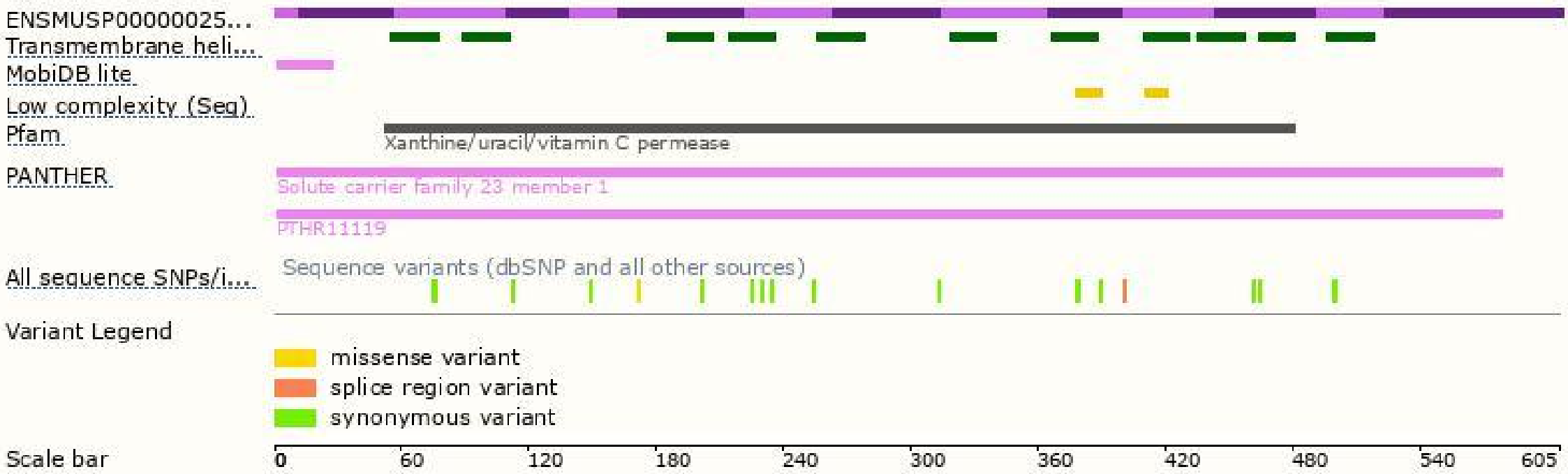
The strategy is based on the design of *Slc23a1-201* transcript,The transcription is shown below



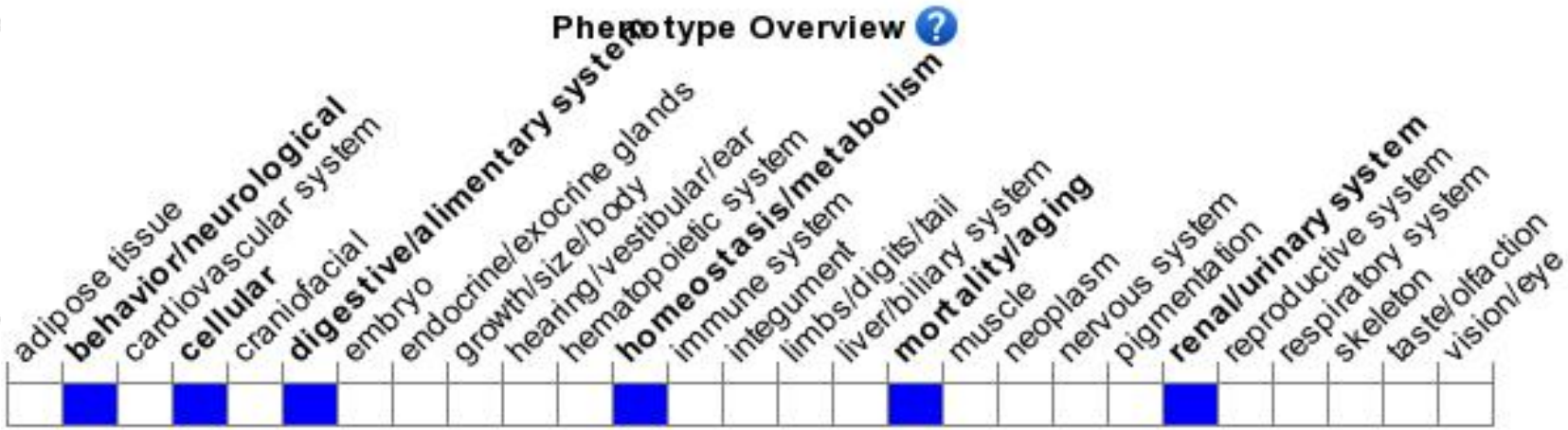
Genomic location distribution



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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